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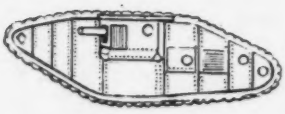

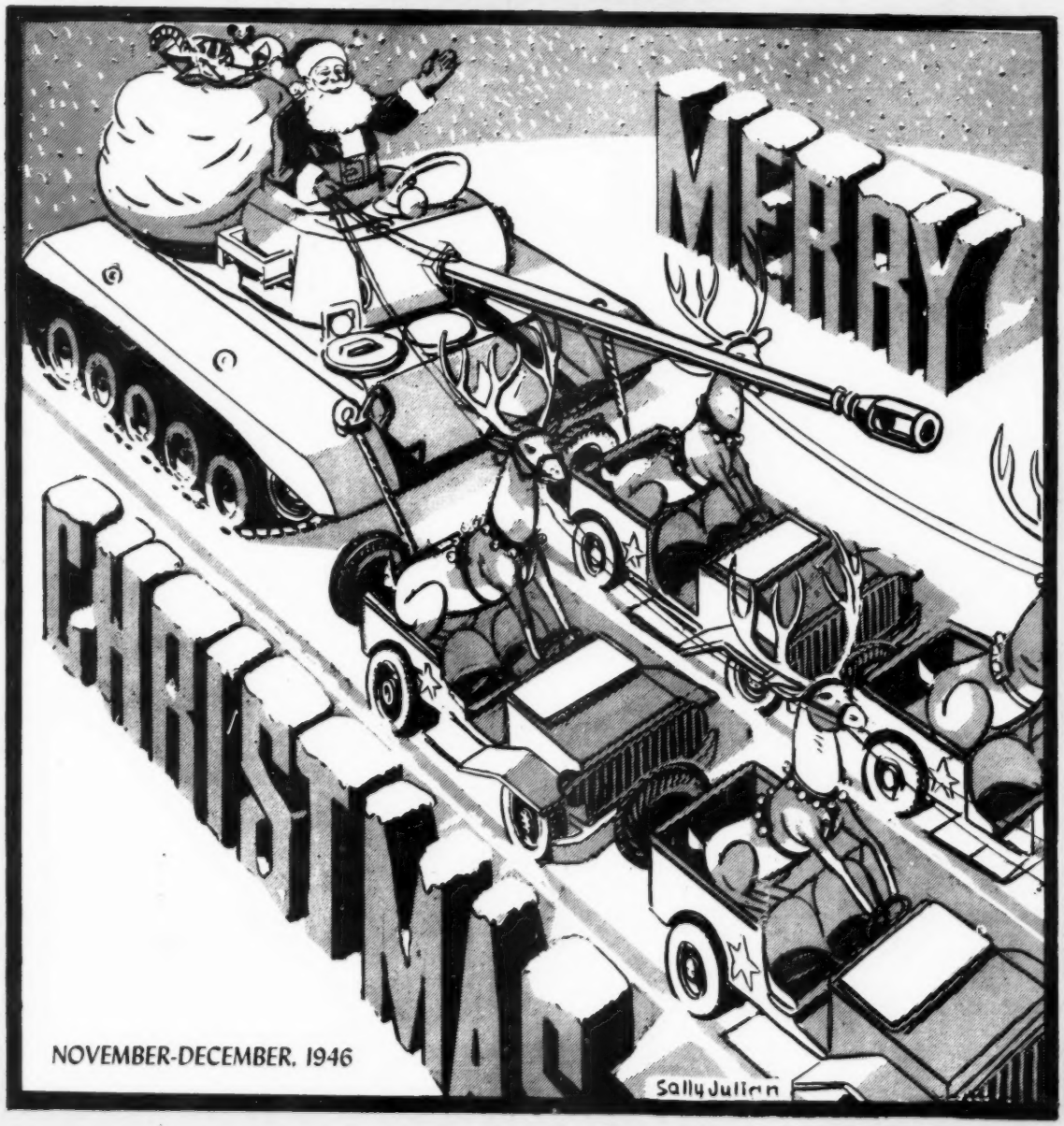

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1st Cav. Div. Photo

A First Cavalry Division armored car passes a reviewing stand in Tokyo. This highly mobile vehicle is effective in breaking up riots and demonstrations.

CAVALRY'S F
IN A

by Colonel Charles A.

**An area three times the si of
Honshu Island is occupi by
sion. In this informative icl
Sheldon, Chief of Staff o he
unit's occupational meth s ar**

WHEN occupation forces in Europe and the Philippines began to realize that the post-hostilities rush for the home fires would not be soon as they anticipated, they gave vent to their feelings in bawdy "we wanna go home" meetings which bordered on mutiny and did little, except menace the good impression laid by American troops during the early phase of the occupation. To combat this feeling of depression and to further security measures, the War Department created a new Armed Force—the Constabulary, in Germany—a mobile group of 32,000 hand-picked officers and men known for their levelheadedness and physical impressiveness.

The occupation force in Japan needed no such disciplinary force for there had been no flagrant exhibitions or mass disorder. Instead, the Eighth Army came to Japan already prepared for the job of disarming and impressing the defeated Japanese. Spearheading the way into Japan minutes after the surrender document was signed, sealed and delivered aboard the U.S.S. *Missouri* in Tokyo Bay, 12,800 crack troopers of the First Cavalry Division quickly entrenched themselves under the scales of a still potentially powerful but writhing dragon. After adding "First in Tokyo" to its long list of firsts (Manila, Tacloban, etc.), the First Cavalry Division settled down to the long, arduous task of pulling the dragon's teeth.

Securing a firm grip on Japan's nerve centers (Tokyo-Yokohama) the First Cavalry Control spread out until its scattered units now sprawl over one-third of vital Honshu Island like a giant octopus. When other units deactivated, the First Cavalry carried on the job, and today it controls ten Prefectures, an area of approximately 23,600 square miles (three times the size of New Jersey), having a population of more than 12 million. Everywhere in Tokyo, the once-proud metropolis, one sees the yellow and black of the Norman Shield shoulder patch with its bar sinister, and horse's head. All roads no matter how small lead to a Cavalry installation sooner or later.

Major General William C. Chase, renowned leader of the "Flying Column," which made the daring dash to Santo Tomas to free 3,700 internees, is the Commanding General of this Division. Two of the Division's four Regiments, the Seventh and the Eighth, are stationed in downtown Tokyo. The Second Brigade's headquarters is located at the Imperial Guard Barracks. One squadron of the Fifth Regiment is stationed in Camp Drake, Asaka, 12 miles from Tokyo—formerly a formidable Japanese Military Academy, but now the site of the Division Command Post. Special troops (Quartermaster, Signal, Reconnaissance, Tank, Ordnance, etc.) comprise the rest of the post. The Division's four Field Artillery battalions are concentrated near Ojima, on the southern tip of Gumma Prefecture approximately eighty miles from Camp Drake. However these battalions have outposts in neighboring prefectural towns: The 61st at Ota, the 82nd at Miizugahara, the 99th and 271st at Koizumi.

After months of tedious work amidst the humid throngs of Japan's cities, Allied personnel are privileged to visit rest hotels (former Japanese resorts, mountain and seaside, famous for their hot springs, beauty, and above all, tranquillity). Scenic Nikko, beautiful, rich in culture and center of Japan's shrines, is foremost among these resorts. Men of the First Cavalry's Field Artillery battalions patrol this area and do Military Police work with the least amount of friction. Additional troops can be called for similar work here if necessary.

Military Government units are stationed in distant, but strategic towns. Other "line troops" are posted in the near-by Yokohama area. Each regiment consists of two squadrons, having a headquarters, weapons and three line troops. In addition to these two squadrons, each regiment has a separate Regimental Headquarters Troop plus a Service and Cannon Troop.

★Chief of Staff, First Cavalry Division.

FIRST TEAM
APAN

*les A. Sheldon, GSC**

**e s of New Jersey on Japan's
upi by the First Cavalry Divi-
ive icle Colonel Charles A.
ff o e division, explains the
eth and policies.**

1st Cav. Div. Photo

First Cavalry Division troopers keep in shape by undergoing a regular training program. Here a group of cavalrymen are working out a tactical problem.

Tokyo is divided tactically, rather than by the old Japanese method of "Kus and Wards." The Second Brigade is in charge of Tokyo City which is divided into four squadron sectors. These sectors are then divided for the unit's convenience. Following certain Ku boundaries is inevitable because it facilitates close contact with the Japanese Police.

But perhaps the most outward sign showing the presence of the Cavalry in Tokyo is the massive parades and display of armed might. The ever-colorful Cavalry parades emphasize mass formations of foot troops, followed by endless columns of rumbling tanks, recon-cars and Artillery. This makes a sound impression on the Japanese people whose lives have been based on respect and admiration of power. Besides impressing the Nipponese, the parades have dual purposes—increase "esprit de corps" and general morale among the troops and to honor visiting dignitaries. Parades including more than 3,000 men were staged in honor of former President Hoover, General Dwight D. Eisenhower and more recently for the six-man Congressional party. The site of the parades—the sprawling Plaza of the Imperial Palace Grounds—adds a touch of "we-mean-business" to the whole affair.

The First Brigade is composed of the Fifth and the Twelfth Cavalry Regiments with headquarters at Otawa. The first squadron of the Fifth Regiment is at Camp Drake, while the second is at Fuchinobe. The Twelfth Cavalry headquarters is at Otawa too. Their first squadron is at Haratsuka and the second is at brigade headquarters.

In Kanagawa and Shizuoka Prefectures there are a number of beach resorts and this area is also patrolled by alert troopers of the First Brigade. Foot patrols and lifeguards are present at every authorized swimming beach for safety and also to keep the Japanese G-string mermaids and men out of our area, and vice versa. Kamakura beach (the French Riviera of Japan) is probably the most extensively visited. Paramount duty of the guards and patrols in this area is to enforce existing restrictions and insure the safety of our men.

The First Cavalry Division operates independently of CIC and CID units but is always in close liaison with them. Either party notifies the other in case of disorder, or when certain "leads" come in. It was "The First Team" that helped locate the gold, silver, and platinum hoard that was hidden in Tokyo Bay by the Japanese before surrendering. The Cavalry to date has destroyed 30,895 tons of Jap ammunition, 3,500 artillery pieces, 100,000 rifles, thousands of swords, etc. Hidden treasures are still being recovered from Japanese installations—especially precious industrial metals. Tips about these hidden stores come from many and varied sources, but the most reliable are from Japanese informers who are closely investigated.

The returning Japanese soldier is a constant source of danger because they were fed an overdose of propaganda and indoctrinated to a certain code of life characterized by their method of suicidal warfare. However, they have caused no alarming problem. Instead, they seem to mingle with the common mass and be lost in its surging tide.

With the revival of its population from near-serfdom to free men, the Japanese labor parties are gaining momentum. Frequently, marches and massive demonstrations are held by thousands of irate groups.

These gatherings, no matter how large, are surprisingly orderly.

The duties of the Cavalry Division do not interfere with the work of the Japanese Police unless the offense involves Allied Personnel. Japanese Police are now armed. They have no powers over GIs but there have been no reports of tension between GIs and the Japanese Police Force. Their primary duty is traffic in so far as the occupational force is concerned. Though the Japanese Police do not hold the position of Demigods which the "Kempei-Tai" (thought police) held, the people respect them.

The "Korean Problem" is becoming less and less a real issue because most of them are being repatriated. The mutual hatred between the Koreans and Japanese has at times broken into full scale riots but the Cavalry patrols have quelled such disorders. Whenever these demonstrations of feelings are in large scale, strategically placed, highly mobile armored cars appear on the scene —(thanks to the two-way radio sets in all patrol vehicles). The "Hot Spot" of these demonstrations was Tokyo's notorious Shimbashi area—the scene of a bustling black market ring, predominantly headed by Koreans.

The food situation may aptly be described as critical in Tokyo but it is not a source of many law violations. Hunger contributes to many petty thefts from occupational forces. There have been several (peaceful) food demonstrations just after the crucial period following the first winter. There was never once a food riot. SCAP has done a fine job in releasing foodstuff to the hungry, thus saving thousands, much to the appreciation and humble gratitude of the people. Statistics show that more people moved into the country, rather than from the country into the city. This trend was probably instigated by the knowledge that more food was to be had in the outlying farm districts.

Housing is a minor problem for the millions in Tokyo. They can throw together a few pieces of lumber, mud-plaster and remnants of bombed out buildings to have a home acceptable to the low living standards of the Oriental.

First Division Cavalrymen are getting regular training as combat troops, and also attend classes in basic Japanese language. Each unit of squadron level maintains its own noncommissioned officer school with classes in relations with civilians and MP work. Modern firing ranges and fields for working tactical problems are available to every regiment.

The population was "deloused" with DDT, and to this is attributed the small percentage of sickness or epidemic among the conquerors and the conquered.

Since the beginning of this occupation each regiment has been required to designate one troop as MPs and they work through the Division Provost Marshal. Their chief job is to regulate traffic on the crowded thoroughfares of Tokyo, enforce speed regulations, prevent black market, help the Division Surgeon in the control of venereal disease and provide escorts for visiting dignitaries.

The occupation is extraordinary in that no disorders are encountered, and it seems assured that the success of this occupation is a surety now. Today, more than a full year after storming the beaches, they are vigorously enforcing "law and order," looking for potential "leads" and at the same time teaching the defeated people through actions the ways of Democracy and Peace—a much more enlighting way of life.

AGF SETS UP TWO GROUPS IN G-3 SECTION

Two major groups—one for training and the other for operations—have been created in a reorganization of the G-3 Section, Headquarters, Army Ground Forces, General Jacob L. Devers, Commanding General, announced recently.

The work of the G-3 Section has been materially increased in recent weeks by the inactivation of the Replacement and School Command, the assumption by AGF of responsibility for the recruit training of all Army enlisted personnel except those going to Air Forces and increasing responsibility by AGF for the organization and Training Group. This group will handle Schools, Replacement Training, Troop Training and Civilian Components.

The Operations Group will handle Operations, Organization and Equipment, and Training Publications and Aids.

First Cavalry Division

by Major Hal D. Steward

A FIRST CAVALRY DIVISION trooper once remarked, "After all, everybody knows that 'First' means 'Number One' ."

Being first was the keynote of this famous Cavalry division all during World War II. It stacked up an unsurpassed number of "firsts" in its battles against the Japanese in the Southwest Pacific.

Some of the First Cavalry Division's most outstanding "firsts" include capturing the first island capital city on the return of the American forces to the Philippines—Tacloban of Leyte; capture of the capital city of the Island of Samar—Catbalogan; first American unit to enter Manila, capital of the Philippines; and first military unit to enter Tokyo, Japan, to get the occupation under way.

Although the First Cavalry Division has only been organized as a division since 1921, many of its units date as far back as 1855.

On March 3, 1855, Congress authorized the formation of the Fifth Cavalry Regiment. The Seventh Cavalry was formed at Fort Riley, Kansas, in 1866, under Lieutenant Colonel George Armstrong Custer. The Eighth Cavalry also organized in 1866 lost no time in establishing itself as one of the outstanding regiments in the American Army. The Indian Wars were over when the First Cavalry Division's youngest regiment, the Twelfth, was formed on February 2, 1901.

But it was an entirely different First Cavalry Division of 1921, the year the division was organized, from the regiments of the olden days. To be sure the morale and élan of the old cavalry troopers who fought the Indians was passed down through the generations to the soldiers who fought the Japs. But the tactics and armament had changed.

Gone were the covered escort wagons. In their places were huge, modern cargo trucks. The well-groomed horses were gone from the division when it embarked for overseas in 1943. Instead of blacksmiths paring hooves, motor mechanics cleaned and tested vehicles. Gone were the Gatling guns with their rotary guns of bygone days. In their place were .30 caliber machine guns. Gone were the old single-action rifles. Instead there were trim repeating carbines, Tommyguns and Browning automatic rifles.

Even though the division had trained for years with horses as its means of transportation it was still capable of becoming successful infantrymen overnight. In early 1943, the division was still mounted. By early 1944, the division had, as a dismounted unit, invaded and defeated the tough Japs on the Admiralty Islands.

The First Cavalry Division was successful as a dismounted unit; however, many of its leaders felt that it would have been even more successful as a horse-mounted unit. It was realized by First Cavalrymen that horses were a means of transportation rather than attack. Horses were capable of going where vehicles couldn't pass. Especially in mountain and wooded terrain a horse-mounted unit could have been used to an advantage.

A modern, well-equipped cavalry division, be it dismounted or mounted on vehicles or horses, is a highly desirable unit in any army. The First Cavalry Division proved this in three major Pacific campaigns. Its now famous "flying column" established the fact that a mechanized and motor-mounted cavalry unit can be successful. The "flying column" crashed through 100 miles of enemy territory in 66 hours to capture Santo Tomas University Internment Camp in Manila and liberate allied civilian internees.

When the First Cavalry Division was alerted for overseas and combat, horses and horse equipment were hastily turned over to other units. By June 18, 1943, the last unit of the division had left Fort Bliss, Texas, which had been the division's headquarters for 22 years.

Arriving in Australia in July, 1943, the division underwent special jungle and amphibious training for five months. After Australia they had a short stay in New Guinea.

Then, the Admiralties, the division's first combat action in World War II. A reconnaissance force under the command of Brigadier General William C. Chase, present division commander, hit the beach of Los Negros on the morning of February 29, 1944, with the mission of securing and holding Momote Air Strip.

A tough assignment had been handed the Cavalrymen in their first test of battle, but they had undergone months of strenuous training and were ready for it.

For the first 24 hours it was 1,000 First Cavalrymen against 5,000 combat veteran Japs. The battle was on.

Six hours after the original landing, General Douglas MacArthur came ashore to discuss the situation with General Chase. The Commander in Chief told him, "You have all performed marvelously. Hold what you have taken, no matter against what odds. You have your teeth in him now—don't let go." General MacArthur then turned and decorated Lieutenant Marvin J. Henshaw, first soldier ashore, with the Distinguished Service Cross.

The original reconnaissance force to land on the

Admiralties consisted of the Second Squadron of the Fifth Cavalry Regiment, a section from the 99th Field Artillery Battalion, a platoon from Troop A of the Eighth Engineer Squadron and attached units.

Four thousand five hundred Japanese soldiers were killed in this campaign.

Many feats of heroism were performed by American Cavalrymen in this Pacific action. One of the greatest acts of outstanding personal bravery was performed by Sergeant Troy A. McGill, Troop G, Fifth Cavalry, who was awarded the Congressional Medal of Honor posthumously. He fired his weapons until all his ammunition was gone and then singlehandedly charged the Japs with a gun using it as a club until he was overcome and killed. He was credited with killing more than 60 enemy.

Major General Innis P. Swift was in command of the First Cavalry Division during the Admiralties campaign. General Chase commanded the First Brigade while Brigadier General Verne D. Mudge commanded the Second Brigade.

Following the fierce fighting in the Admiralties the First Cavalry Division troopers settled down to a few months rest. Then came an assignment that was to turn out to be even bigger and tougher than the Admiralties. The First Cavalry Division had been selected as one of the four initial divisions to storm the beaches of Leyte Island in the Philippines.

At 10 A.M. on the morning of October 20, 1944, the first wave of Cavalry troopers hit the beach at Leyte.

The Seventh Cavalry Regiment under the command of Colonel Walter E. Finnegan started off the Philippines campaign by taking Tacloban, capital of Leyte Province, a full day ahead of schedule.

They continued to push on until they were approximately four days ahead of the original schedule when they captured the town of Babatngon after moving across the entire northwestern end of the island. In making this rapid movement the First Cavalry Division's assigned mission of securing San Juanico Straits also was accomplished ahead of time.

Two other regiments, the Fifth and Twelfth Cavalry, spent more than 50 days in the rugged, mud-soaked mountains of Western Leyte, which was the Japs' last stronghold. The Twelfth Cavalry was the unit that fought through to deliver the final blows to the stubborn Jap forces on Leyte.

During these actions the Fifth Cavalry was commanded by Lieutenant Colonel Charles E. Brady, the Twelfth by Colonel John H. Stadler, Jr.

The division came in as a reserve unit after the island of Luzon had been invaded on January 9, 1945. It landed on the Luzon beaches January 27, 1945. Three days later it was scheduled to begin a maneuver that would overshadow everything it had done in the past.

One minute after midnight on February 1, 1945, the division started its dash for Manila, capital city of the Philippines, to liberate 3,700 civilian allies interned at Santo Tomas University and also to capture and secure Malacañan Palace, capitol building of the Philippines.

When the First Cavalry Division left Guimba, where the push to Manila began, the column was spearheaded by tanks from the 44th Tank Battalion and squadrons from both the Fifth and Eighth Cavalry Regiments. The force was under the command of General Chase.

Supporting the leading column was the remainder of the Fifth and Eighth Cavalry, and the other two Cavalry regiments in the division—the Seventh and Twelfth.

Twenty miles from Manila at the Angat river the First Cavalry and the 37th Infantry Divisions made contact. They had been operating parallel to each other. Until the divisions reached Manila the 37th Division had been meeting the most enemy opposition.

A few minutes after 6 P.M., February 3, a Cavalry tank entered the city limits of Manila. The First Cavalry Division had added another "first" to its credit.

On the outskirts of the city the Cavalry column split. One unit sped on to capture and occupy the Malacañan Palace—the other rushed through Manila's streets, crashed through thick walls to capture Santo Tomas University and liberate more than 3,700 allied civilians who had been interned by the Japs for three years and a month.

This event was to climax everything the First Cavalry Division had done in the past. Today it is still the highlight in the division's outstanding history.

During the Leyte campaign and the Luzon campaign until February 28, when he was wounded by a Jap grenade, Major General Verne D. Mudge commanded the First Cavalry Division. Brigadier General Hugh F. T. Hoffman replaced General Mudge and commanded the division until August of 1945. At that time General Chase, by then a major general, returned to the division from the 38th Infantry Division, which he had been commanding for several months, to assume command. General Chase is today commanding the First Cavalry Division in Japan.

No division in the American Army today can boast of a prouder record than that of the First Cavalry Division.

Yes, the horses are gone from the division, but the traditions are still there as they have always been. The First Cavalry Division has established a lasting place for all Cavalrymen in American military history.

Today "First" still means "Number One" to every member of the First Cavalry Division.

What's Wrong With Armor?

"Mechanized War" by Sergeant George Baker. Reprinted with permission of *Yank* Magazine from the November 3, 1944, issue.

*by Captain Stephen M. Barker**

Holder of the DSC, Captain Barker served a great deal of his time with armored units in combat in World War II. Herein the author shows the necessity for an armored force with its own mechanical mine sweepers and bridges. His suggestions are timely and worthy of consideration.

TAKE a look at the miles of "tanks" crawling slowly forward while "Sad Sack" clears the way. We smile now, but incidents like that were once routine. Can't you hear an angry general . . . roaring for action . . . and a bristling colonel blaming the engineers? The engineer commander rushes to the defense of his "Sad Sacks," but still the column creeps slowly on.

Smile now while you can. Then look at the picture again. Doesn't the artist hit the nail on the head? There is mechanized might, hell on tracks, or whatever you wish to call our fastest moving, hardest hitting ground force. A half dozen mines, a crater in the road and a handful of snipers can easily delay a large armored force. It has happened uncounted times. TNT to stop the tanks . . . snipers or mortars to stop "Sad Sack" with his gadgets and tools . . . and our most mobile arm is the least mobile of them all.

A paradox? Yes. Armor is designed to crush the enemy with exceptionally mobile, hard-hitting weapons, its personnel protected with armor plate. The defense against it is logical. Stop the tanks with obstacles that force dismounted men and vulnerable equipment to prepare a new crossing or route. Now stop the unprotected men and machines with mortars or other weapons which are poor targets for the tanks. The weak link is the dismounted men, the engineers. Our armor depends upon relatively unarmored engineers.

In spite of all this they have done a stupendous job by previous standards. That they could do one hundred times better with special equipment is seldom considered. We must consider it, now more than ever, for other nations have watched us. They may have learned lessons from our experience that we have failed to grasp.

The basic principle of armor . . . high mobility combined with heavy fire power and relative invulnerability . . . has barely been tested, for armor has been mobile only in the most favorable circumstances. Modern armor relies upon terrain free from artificial and natural barriers or else upon a previous penetration of the enemy defense to a depth that provides intact bridges and unmined country.

Armor, to be fully exploited, should be able to advance as fast as it can overcome the enemy. Enemy strength in men and weapons should be the criterion. Inert obstacles such as mines and streams should not be. Powerful as armor is, it can never deliver its Sunday Punch until it can roll over obstacles.

It is true, we have excellent obstacle crossing equipment . . . by the old standards. The bulldozer, the treadway bridge, the bailey bridge and others are now recognized essentials in an armored offensive. They

*Former 1st Armored Division Engineer Officer.

nevertheless are insufficient. They are too slow to permit the proper use of armor. An enemy sniper or mortar crew can stop a bulldozer or a bridge building job. Work jobs must have outposts or some semblance of a bridgehead. Bridgeheads take time. This is the fallacy, the paradox of armor, the missing equation in the theory of tanks.

Armor will be delayed as long as we adhere to the ancient bridgehead theory. It will be delayed at each demolition as long as it takes, first, to establish the outposts or bridgeheads, second, to overcome the obstacle, third, to get the tanks over the new crossing and once again into contact with the enemy. And, each delay permits the enemy time to prepare a new obstacle.

These delays during obstacle crossing are in direct opposition to the theory of tanks. Armor should be insensitive to small-arms fire. The fault lies in our so-called armored engineers, our dismounted mine detectors. Dump truck and dismounted engineers have no place at the head of an armored column. Yet we depend upon them.

Yes, the trouble with armor is its unarmored engineers. Rather, it is with our concept of the armored engineer's role. Insufficient stress has been laid upon speed. Armor must *smash* its obstacles, or hurdle them without pause. A dump truck engineer organization is not capable of the required high-speed mission. Armor should rely upon special engineer equipment to gain the necessary speed. The special equipment must be at least as invulnerable to enemy fire as the tanks themselves. We must therefore consider armored engineer methods, organization, and equipment in an entirely new light, for upon these depend the future of the tank, the blitzkrieg and maybe even greater issues.

The Doggone Gadgets

Important beginnings have already been made with special obstacle reducing equipment. I vividly recall the astonishment and interest of a truckload of high-ranking German prisoners on one of those glorious last days of the war. They saw in our column of monstrous bridge-carrying tanks of the "ark" type and in our many other "gadgets" things which many of us have failed to appreciate. Again, I have seen the surprise in an enemy doughfoot's eyes as he looked at an American tank dozer and slowly realized its purpose. Even more awed were the Germans guarding Anzio's mine fields when they saw a "snake" explode a clear lane before their eyes releasing the trapped armor from the countless thousands of enemy and allied mines.

Yes, steps have been taken to replace "Sad Sack" and his mine detector. Many were field expedients demanded by the situation. For, war with the Wehrmacht, which developed mining and demolition to a fine degree, has proven their need and started their development.

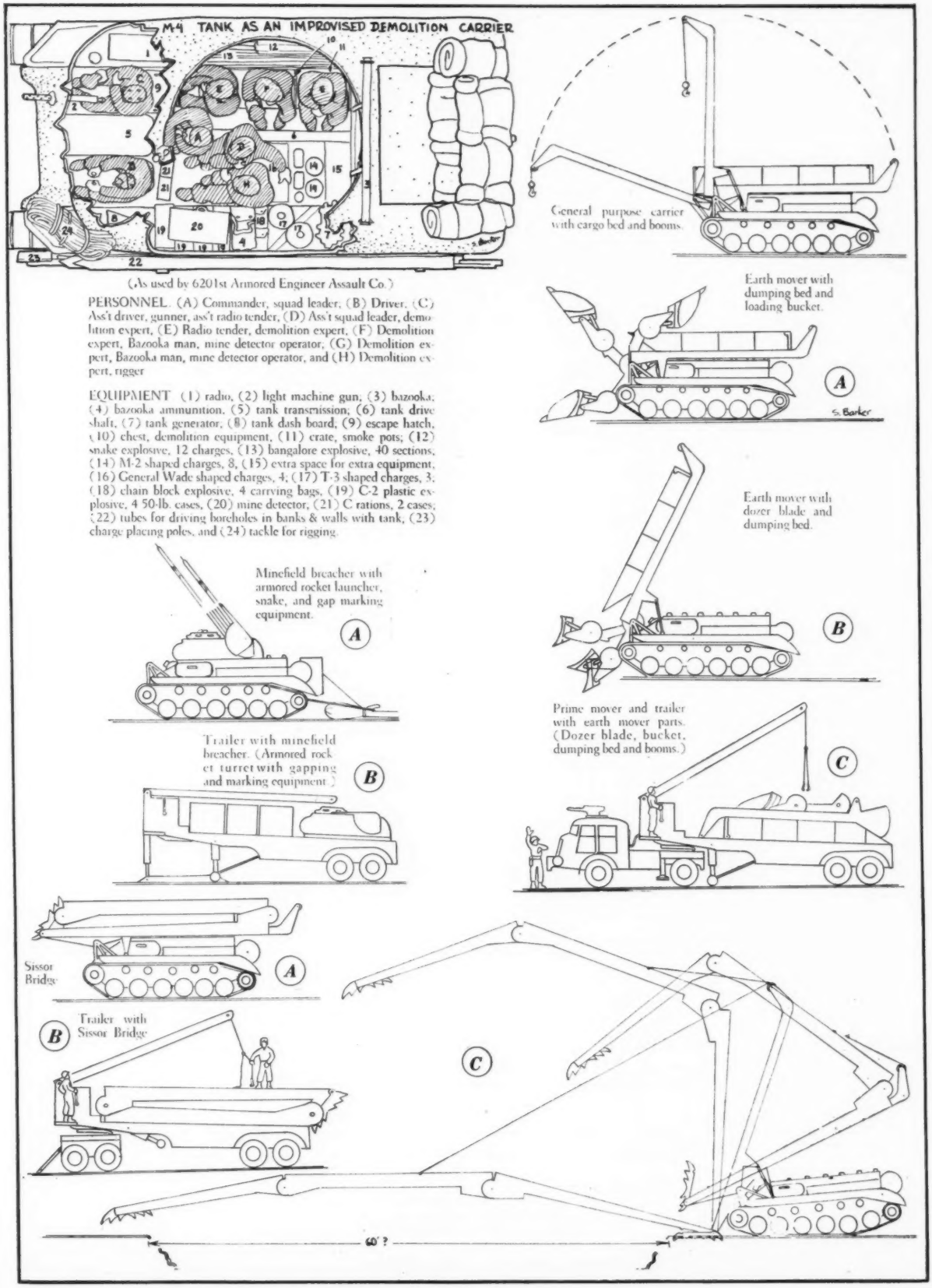
For instance, the British at Alamein, faced with hundreds of thousands of mines, improvised two flails or "scorpions." Chains fastened to a rotor on the front of a tank and powered with a Ford engine lashed the ground to detonate mines. The machines were new and makeshift. It is not surprising, therefore, that one wore itself out in the main attack, even before it reached the mine field. It was, nevertheless, a step in the right direction, and the British Eighth Army at once made a large number of better "scorpions." Soon an improved model was produced in the United States. Then, in 1943 in the American Fifth Army, a provisional mine clearance company was organized and equipped with "scorpions." Later, an improved flail, the British "crab," was manufactured and put in combat, but even that had minor faults that made it impractical. At least it could cross the bailey and treadway bridges, which the "scorpions" could not due to their bulky, sideheavy, outboard auxiliary engines.

The tank dozer is another example of an armored obstacle remover. In a muddy Italian field in 1943 engineer officers and ordnance men of the U. S. First Armored Division mounted a D-7 angledozer blade on a T-2 tank retriever and controlled it with a Quickway crane winch. This tank dozer proved better than a previous model, and although it was far from perfect, it possibly contributed as much as any other single factor to the saving of Anzio beachhead during the four long months of siege for this vehicle extinguished from one to a dozen major fires nightly in ammunition dumps by covering exploding ammunition with soil while the dumps were being strafed, shelled and bombed in an enemy effort to destroy our fire power. This is not a typical case of armored engineering, but it shows what tank-mounted machinery can do in the face of furious enemy opposition.

A still better tank dozer, made from an M-4 medium tank, a D-8 dozer blade, and a bridge truck hydraulic system, ignored shelling and small-arms fire to fill craters and gorges in the mountains of Italy which is poor tank country at best. It was "knocked out" on many occasions like many a good tank has been, but it nevertheless remained in almost daily combat. On one occasion this vehicle and another tank dozer spent three days during active combat working two miles ahead of all other troops to prepare a ford and several by-passes. That is an almost absurd example of true armored engineering.

The widely distributed "GI tank dozer" has proven many advantages of armored obstacle reduction. Yet, it was relatively undeveloped and in most cases poorly exploited. Its maintenance problems were so great that three tank dozers were required so that one might be in operative condition when needed. Bogies, clutches and engines wore out at a terrific rate, yet these dozers did many "impossible" jobs.

Its greatest fault was usually its crew, as is often the case with special equipment. Just as the blade had been hung on the tank, as an afterthought, so had tank dozers been distributed and manned . . . as after-


M-4 TANK AS AN IMPROVISED DEMOLITION CARRIER
(As used by 6201st Armored Engineer Assault Co.)
PERSONNEL. (A) Commander, squad leader, (B) Driver, (C) Ass't driver, gunner, ass't radio tender, (D) Ass't squad leader, demolition expert, (E) Radio tender, demolition expert, (F) Demolition expert, Bazooka man, mine detector operator, (G) Demolition expert, Bazooka man, mine detector operator, and (H) Demolition expert, rigger
EQUIPMENT (1) radio, (2) light machine gun, (3) bazooka, (4) bazooka ammunition, (5) tank transmission, (6) tank drive shaft, (7) tank generator, (8) tank dash board, (9) escape hatch, (10) chest, demolition equipment, (11) crate, smoke pots, (12) snake explosive, 12 charges, (13) bangalore explosive, 40 sections, (14) M-2 shaped charges, 8, (15) extra space for extra equipment, (16) General Wade shaped charges, 4, (17) T-3 shaped charges, 3, (18) chain block explosive, 4 carrying bags, (19) C-2 plastic explosive, 4 50-lb. cases, (20) mine detector, (21) C rations, 2 cases, (22) tubes for driving boreholes in banks & walls with tank, (23) charge placing poles, and (24) tackle for rigging.
General purpose carrier with cargo bed and booms.
Earth mover with dumping bed and loading bucket.
A
S. Barker
Earth mover with dozer blade and dumping bed.
B
Minefield breacher with armored rocket launcher, snake, and gap marking equipment.
A
Trailer with minefield breacher. (Armored rocket turret with gapping and marking equipment.)
B
Prime mover and trailer with earth mover parts. (Dozer blade, bucket, dumping bed and booms.)
C
Sissor Bridge
A
B
Trailer with Sissor Bridge
C
60'?

thoughts. Provision for manning and maintaining such special equipment must be reflected in tables of organization or amendments thereto.

Other "working tanks" that have already been produced or improvised are rollers of various types for detonating mines, folding bridges such as the British scissors, the Churchill Self-launching Bridge, the LVT "doodlebug" ramp for mounting coral banks, ark bridges, fascine carriers for filling ditches, demolition carriers and personnel carriers. Tank retrievers belong in the same class for they have proven themselves vehicles capable of removing obstacles and even carrying and placing bridges under fire. Likewise, such accessories and means used by tanks as "snakes" and rocket trailers for detonating mines, mortar grapnels for pulling trip wires, direct armor-piercing cannon fire for producing bangalore-boreholes, petards and demolition rockets for breaching walls, the Davis treadway dolly bridge, the various tank launched bailey bridges, the tank pallet or sled for hauling assault supplies . . . these, and numerous other armored and semi-armored obstacle reducers have been improvised and used in battle. Necessity has mothered their invention. One can plainly see the direction in which the armored units have been groping.

The next logical step was to design a special machine plus a special organization with a special mission. This was far more difficult.

Armor's Unarmored Engineers

One of the most notable "working tanks" was the British Avre (armored vehicle, royal engineers). This Churchill tank, stripped of its gun, was equipped to carry engineer troops, tools and explosives. It mounted a petard or spigot-type mortar capable of throwing a 40-pound demolition bomb. The crew was a special engineer squad with a very particular mission.

The American version or AVE (armored vehicle engineer) was an M-4 tank with tank dozer blade, room for engineer soldiers, explosives, and a rack of demolition rockets atop the turret in lieu of cannon or petard. It was a noteworthy vehicle in many ways. Even so it had its faults, for it possessed the mechanical failures of the tank dozer. Theoretically it was sound, but in action neither it nor any other tank formed the basic item of equipment around which the standard U. S. armored engineer battalion was designed. If anything held that unique position it was the two and a half ton GMC dump truck.

Useful as the dump truck was, it still depended upon hand loading, for no quick mechanical means was furnished the armored engineer battalion normally. Once loaded with gravel it provided the squad it carried with no room for their tools, their explosives, or themselves. The men had to stand atop the load, or as I have seen them do, attempt to dig foxholes in it. Miserable vehicles they were to accompany the point of a column, yet it is the point that needs the immediate engineer support to get ahead. The only other alternative for the assault engineers was to ride the top of a fighting tank, carrying only those tools and explosives that they could hold in their hands. Naturally their support was feeble and slow, for they could do little more than call back for bridging or whatever else was needed and ask for the establishment of outposts or security that the bridge or by-pass might be completed. Thus, in crisis after crisis, armor was relying upon unarmored and unequipped troops.

Consequently, just prior to the 1945 Po Valley Offensive, the First Armored Division did considerable experimentation in armored assault of such obstacles it expected to encounter as fortified ditches, dykes, canals, etc. The entire division was trained in special techniques and a provisional company of 260 men and 44 special purpose tanks was formed. Included were arks (tanks with bridging welded on top), fascine carriers (tanks adapted to place log and culvert crossings in deep but narrow streams), personnel and demolition carriers (modified tanks affording maximum dismounted support for the head of a column), tank retrievers (for removing obstacles, placing bridges and withdrawing arks, etc.), crabs (for clearing mines), dolly treadway bridges (short wheeled bridges pushed by tanks), tank dozers and a Churchill self-launching bridge tank.

Actually the equipment was used in very few instances, for the enemy ran short of explosives and abandoned demolition almost entirely. Nevertheless, it proved its ability to do speedy construction while under fire. Furthermore, the bulky equipment had a grueling test of its ability to march. The organization likewise was tested in its capacity to function administratively and otherwise during a campaign. Many important lessons were obvious to those who heeded them. One lesson was that that particular type of unit is not the best answer to the assault clearance of obstacles even though it does have many advantages over conventional engineer methods and equipment.

Most obvious was the fact that new ways of getting our armor forward in spite of natural and enemy obstacles are quite possible. There is no doubt that with new techniques of obstacle assault armor can fulfill the smashing mission expected of it, but without engineer support that is truly armored our tanks will often be the least mobile of all our fighting forces.

Armor Needs A "Working Tank"

Let us now consider the problem from its logical beginning. First we must ask, "What are the fundamental requirements of obstacle assault equipment?" A likely answer is that such machinery must possess speed, relative invulnerability, mobility, dependability and versatility. These at least are the most obvious requirements.

We can gain speed in overcoming obstacles, first, by replacing manpower methods with modern mechani-

cal means such as a contractor employs whenever possible. Second, we must provide both crews and machines with armor, thus decreasing the necessity for establishing the small but time-consuming bridgeheads around them. In other words, the machines must be just as invulnerable as the tanks, if not more so. Third, and this is important, the required men and machines must be available in sufficient quantity to handle all of the work expected, and handle it simultaneously at numerous places.

The assault vehicles must obviously be mobile. They must go wherever tanks go. Most of today's "gadgets" cannot. Assault vehicles must therefore closely approximate fighting tanks in height, width, length, weight, turning radius, fording ability, flotation, etc. It is a sad mistake to try to increase the mobility of armor with vehicles that are more clumsy than armor, yet that has often been attempted.

Dependability is of vital importance. Skeptics point to the continual bogie trouble of the tank dozer as their chief argument against it. An armored dozer designed specifically for its job and thoroughly tested should be just as dependable as an ordinary tractor type bulldozer or an ordinary fighting tank.

Versatility is probably the most important requirement of all. Terrain and natural obstacles change from one mile to the next. Furthermore, a clever enemy can make obstacles in a multitude of forms. The methods and equipment for overcoming such obstacles must therefore be extremely adaptable. A minimum number of types of unusually versatile equipment must be developed. These machines, moreover, must be incorporated in the TOs and TEs of the armored engineers in such a way that their numbers can be varied . . . some types dropped . . . others added . . . according to the particular campaign requirements. Provisions for modifying maintenance facilities and crews accordingly are also necessary.

Allowance for experimentation and modification of methods and machinery in the field, close to the front, is also a necessity if rapid adaptability is to be gained. Experimentation in the field by U. S. Army units in the recent war was done under considerable handicap. Here necessity not only fosters invention but demands practical results. It is here, therefore, that research and development should be carefully encouraged as a useful adjunct to the experimental programs carried on at the forts and factories within the U. S.

The Versatile Vehicle

It is quite possible that a single heavy duty tanklike chassis equipped with certain standard accessories can replace all, or almost all, of the many types of gadgets needed. This chassis should be armored but not armed heavily. Its sole purpose is to do a job of work, not to fight. Fighting is the task of the fighting tank. This vehicle should have a power take-off, a hydraulic pump and a fast but powerful winch, all for operating the various accessory parts. The chassis should have cargo space, plenty of it. It is needed for carrying explosive equipment, construction tools, building materials, or men, as the case requires.

The addition of various accessories would convert the chassis to any one of several types of assault machine. These essential types of assault machinery are: 1. earth-movers, 2. mine-removers, 3. bridges, 4. carriers. Let me explain them.

By an "earth-mover" I mean something along the lines of one or more of the following pieces of equipment: bulldozers, scrapers, carryalls, loaders, dump trucks, demolition rockets, petards, and bulk explosives. All are used to move dirt, or other obstacles. The answer may be a tank chassis with a dozer or loader type blade and a dumping truck type bed. A flail, snake, or rocket launching attachment may solve the problem of the mine remover. The bridge should probably be a scissors type class 40 span of 60 feet or so although the tank should also be able to launch, by pushing, a standard military bridge like the bailey of 100 feet or more.

By "carrier" I mean a truck-like vehicle. It should be part of the "earth-mover" just mentioned. It should also be easily adapted for carrying ponton type bridging, storm and assault boats, bulk explosives, mines, culverts, fascines, prefabricated road mat and all the other paraphernalia of the engineer's trade. Like the present Brockway bridge truck, it should have booms or a derrick to place its load accurately as well as to load itself. The bed should dump, not rearward like a truck, but forward over the tank's bow. As a carrier it should also be able to transport an armored heavy duty air compressor for inflating pontons and powering hand tools.

The army's truck-mounted Quickway Crane towed a special accessories trailer with pile driver, crane boom, bucket and shovel attachments mounted upon it. In a similar fashion, the proposed vehicle should have its accessory parts easily transportable on special trucks or trailers. These accessories should be mounted on wheels in the division rear until needed. Spares should be in Corps and Army dumps likewise on wheels and ready to roll. When needed they would have to travel forward, meet the tank chassis near the front, and without the aid of other equipment these two should exchange loads in a matter of minutes.

Of course the division's obstacle removers would all be equipped with one accessory or another according to the needs of the battle. They would travel with the division's points ready for instant work. But, when one equipped as a bridge layer for instance, expends its load, it must be quickly fitted with a replacement bridge. It must travel but a very short way to the rear to obtain this replacement bridge. We must therefore carry extra loads and accessories. We must keep these loaded "on wheels" ready for instant marching. They must be ready to roll at all times.

These accessories should not overtax the trains and

dumps. I do not propose, for instance, that a normal quota of bridge be carried in a desert campaign. Nevertheless, the replacement loads must be available in quantity, for they are the ammunition of the working tank.

The Avre was World War II's nearest approach to the all-round working tank. It was considered adaptable to every assault need. If it was, it was at least too time consuming to adapt it in combat. Its turret had to be removed and the tank had to be rebuilt with a special cupola before converting it to a self-launching bridge. It was an excellent vehicle, but armor's engineers need more than a made-over tank. They need a new and special piece of equipment.

The answer is a better vehicle than the Avre, the bulldozer or any present machine. Its construction is far from impossible, for we need only to consolidate upon one chassis various types of existing equipment. This is well within the scope of American industrial knowledge and American military ability.

The "gadgets" have proven that special armored vehicles can quickly and effectively fill craters, place bridges, clear mines, etc. In the future they will replace the dump truck engineers. Of course it would be foolish to attempt to replace skilled, courageous hand labor completely, but we must not depend upon it as we have, nor should we carry it exposed and without adequate equipment on the top of a fighting tank.

Let us look ahead. A war in the future may use innumerable nasty devices. Blown bridges may be contaminated with persistent chemicals, virus or bacteria, mines with proximity fuses and radioactive debris. These would seriously delay most manual labor. Airtight tanks protected from radioactive soil with special armor may be essential for fighting, for carrying troops and even supplies, and most certainly for clearing obstacles and bridging streams.

Yes, the "Rube Goldbergs" are here to stay. Careful thought must be given their development, for armor's wallop depends upon them.

ACTIVATED ORC CAVALRY AND TANK UNITS

Here are the names and location of the Cavalry and Tank units that have been activated to date in the Organized Reserve Corps:

First Army Area

Boston, Mass.—Headquarters and Headquarters Troop, 304th Cavalry Group.
New York, N. Y.—Headquarters and Headquarters Troop, 303d Cavalry Group.
Brooklyn, N. Y.—Headquarters and Headquarters Troop, 302d Cavalry Group.

Second Army Area

Washington, D. C.—782d Tank Battalion (Armored-Drawn Type).
Cleveland, Ohio—83d Reconnaissance Troop.

Third Army Area

Atlanta, Ga.—Headquarters and Headquarters Troop, 301st Cavalry Group.
Athens, Ga.—314th Cavalry Reconnaissance Squadron.

Fourth Army Area

None to date

Fifth Army Area

St. Paul, Minn.—315th Mechanized Cavalry Reconnaissance Squadron.

Sixth Army Area

Phoenix, Ariz.—Headquarters and Headquarters Company, 19th Armored Division.
Seattle, Wash.—75th Amphibious Tank Battalion.

The Capture of Muhlhausen*

by Brigadier General R. W. Grow, United States Army

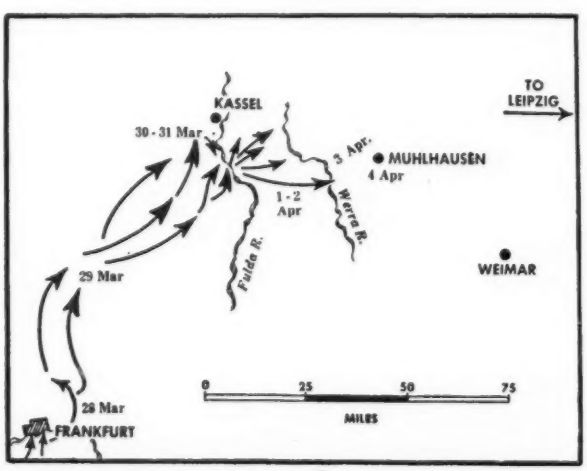
THE operation described here was typical of many during the great exploitation east of the Rhine in March-April 1945. There are several important tactical principles involved and the action was so successful that it warrants study.

Background

After crossing the Main River from south to north, a few miles east of Frankfurt late on 28 March, the 6th Armored Division came under XX Corps and was given the mission: "Seize Kassel," (about 100 miles air-line). By dark on the second day (30 March) a line some five miles south of Kassel had been reached. Resistance which had been scattered then suddenly stiffened to the extent that a coordinated attack by at least the whole division would be required. In the meantime the 80th Division was closing up, so on corps order the latter took over the mission of capturing Kassel to the north while the 6th Armored turned east initially with an objective of Leipzig (125 miles), changed late on 31 March to Weimar (80 miles a little south of east). To reach either objective the general route lay through Muhlhausen.

As can be seen from Sketch 1, the division operated in multiple columns, four to six (not all of which are shown); but was forced to cross both the Fulda and Werra Rivers in a single column. The reasons for this constitute an interesting study in themselves. It was SOP in the 6th Armored Division to hit any river on as broad a front as possible with four or more columns if routes were available; to seize initially existing crossings, if any, and establish small bridgeheads. Then depending upon how many crossings were secured we poured everything over the most suitable ones. If no bridge was captured one had to be built after the site was seized. There was always the question: Should we build more than one bridge in order to cross faster? The answer depended on whether material was available to build two or more simultaneously, or could we build one and get everything across it before material for a second could be spotted.

Military Review.



Sketch 1.

All bridges over the Fulda south of Kassel had been destroyed except one railroad bridge which was partially gone (one track of the double track was left). The best bridging site appeared to be opposite the 69th Combat Team, which fought its way across dismounted against machine-gun fire on 31 March. A bridge was built that night. The Cavalry Reconnaissance Squadron picked its way precariously across the railroad bridge a few miles to the north, and the balance of the division crossed the engineer bridge on 1 April, immediately developing into six columns on the east bank.

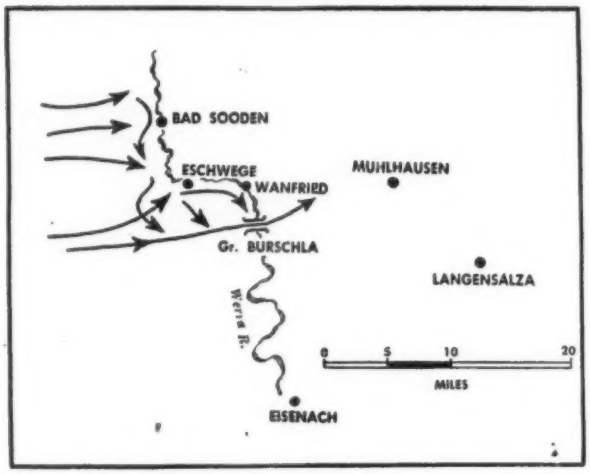
The Werra River presented a slightly different problem. Each column had encountered considerable opposition and enemy air had been particularly active on 1 and 2 April. Of the six columns the one on the extreme right captured a bridge intact. The one on the extreme left had an intact bridge in its front strongly defended. Therefore the three right columns (CCB) were all diverted over the captured bridge at once while the attack on the left (north) bridge defenses continued throughout 3 April. The enemy finally destroyed the bridge before it could be seized so during the night of 3-4 April, the three left columns (CCA) were pulled to the south and again the whole division crossed a single bridge, fanning out on the east bank and continuing on 4 April.

Had we given the enemy more time by advancing on a narrow front, the bridge which we seized would have been blown, as it was prepared except for the placing of explosives which had not arrived.

Capture of the City

The picture as it appeared to us on the morning of 4 April is shown on Sketch 2.

Muhlhausen was known to be a city of about 50,000 and to contain certain important German government officers and officials. It was probably defended but it was important to prevent the escape of the government officials. German resistance in the Bad Sooden area had been strong and the enemy was known to be in strength in the hills north of Eschwege. There had been no resistance at Gross Burschla, but Wanfried was held by the enemy. There were no friendly troops east of the river to the north of Bad Sooden, and to the



Sketch 2.

south we were out of contact with the 4th Armored Division which we knew was fighting for Eisenach about fifteen miles up the Werra River. Therefore the division was shooting into the open with neither flank covered and the north flank known to be threatened by rather strong forces.

(Parenthetically it is interesting to note that several days later, 7 April, before the First Army troops on the left came up, the division was struck on the left rear by a strong counterattack northwest of Muhlhausen and was forced to throw all reserve troops into action to clear the pocket north of Eschwege and east of Bad Sooden, destroying a force of 1,500 Germans.)

For a few miles east of the Werra River the country is hilly and wooded, then just west of Muhlhausen it breaks into the great Thuringian plain, as fine a maneuver ground as one can imagine.

The plan for 4 April was simple and is shown on Sketch 3.

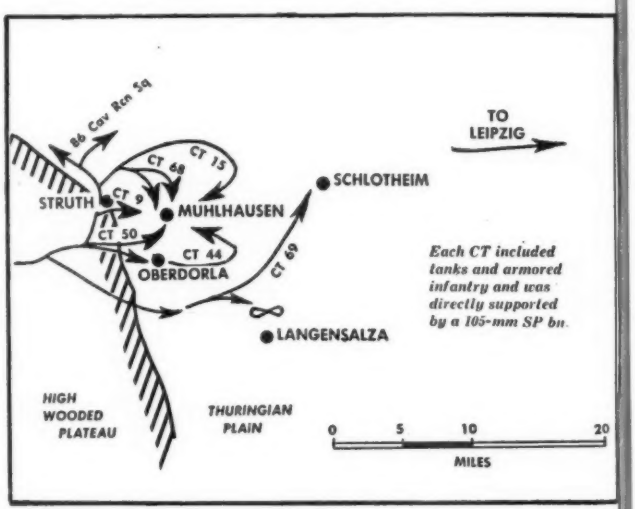
While the 86th Cavalry Reconnaissance Squadron protected the exposed left rear, six combat teams poured out of the hills, deployed across the plain, swiftly knocked out all opposition and completely surrounded the objective. Combat Team 69, in the lead, had no opposition until it neared the airfield northwest of Langensalza. Here tanks laid direct fire at 2,000 yards on German planes frantically trying to take off amid April showers, an amazing sight. (Although the airport was by-passed at this time in order to continue the mission, it was secured the following day together with a number of practically undamaged planes.) The enemy was driven east of Schlothheim and the "back door" closed.

Combat Team 44 had stiff rifle and bazooka resistance in Oberdorla, south of Muhlhausen, and destroyed the town. The other four combat teams each encountered road block and light resistance, but all completed the investment of the city by dark with all exits blocked and patrols working into the suburbs.

At daylight 5 April Combat Teams 9, 50, and 44 quickly entered the city while Combat Teams 68 and 15 blocked and the 86th Cavalry Reconnaissance Squadron stretched east to extend a protective screen along the whole north flank. Prisoners totalled only about 2,000 which accounted for the lack of resistance in the city but some 285 members of the German Foreign Ministry with their records were taken.

Although the resistance actually encountered was not serious, the enemy strength had been unknown and therefore the plan was designed to bring the full power of the division into action against a concentrated objective and at the same time provide ample security against the most dangerous outside threat, from the north (known, 20mm and mortar fire north of Struth) and east (unknown). The problem was not only to capture Muhlhausen but to prevent the escape of important Nazis. Few, if any, escaped. Due to the fact that the division crossed the Werra River in one column, the development had to be successive. Therefore, CT 50 which was leading, initially blocked in the hills southwest and out of sight of the city, CT 69 next in column was given the long mission to Schlothheim, followed by CT 44. Units of CCA crossed the river in the order CT 15, CT 68 and CT 9 so that all closed in on the city simultaneously. The Reconnaissance Squadron crossed ahead of CCA to cover the flank.

After Langensalza was cleared on 5 April, the division established a line from south of that city, north through Schlothheim thence northwest and west which eventually extended forty miles before First Army troops came up on the north flank on 9-10 April.



Sketch 3.

Planning U. S. Industrial Mobilization

by Leonard J. Grassman

The "Prep Agency" of the United States is the Army-Navy Munitions Board, one of the most important and least publicized mediums of our national readiness against possible future aggression. In this article Leonard J. Grassman gives the first complete picture of just what the ANMB is and what it does.

THE United States must be ready to meet any threat of war. It cannot entrust its security to the conjectures of successful and lasting peace until there is concrete assurance that such a peace is an actuality, not just a possibility. In the meantime, it must remain strong enough to maintain that security. "The price of Liberty is eternal vigilance."

General of the Army Dwight Eisenhower lent the weight of his military genius and leadership to this belief in stating: "National security is a state of organized readiness to meet external aggression by a quick and effective mobilization of public opinion, trained men, proved weapons, and essential industries, integrated into the most efficient instrument of armed defense, and reinforced by the support of every citizen. The security establishment comprises *all* the people, *all* our enterprises, *all* our government."

The government has created an agency to aid in providing us with lasting preparation until we reach that age of peace when such preparedness is no longer necessary.

The "Prep Agency" of the United States is the Army-Navy Munitions Board, one of the most important and least publicized mediums of our national readiness against possible future aggression. It is a board devoted to research in preparation for national emergency and an over-all liaison between our national material might, our industry, and our combat elements.

Although this agency was originally constituted in 1922, it is doubtful that many Americans knew even of its existence—certainly not its functions.

In its 25 years of existence, the ANMB has passed through many periods of change and evolution—from a token body without much significance to its extremely important stature at present. Today, most of its work is concerned with four major responsibilities: the development, during peacetime, of an industrial mobilization plan which will when effectuated develop the national economy and harness industry effectively to the military need in any future emergency: the responsibility for the administration and operation of the statutes covering the stock-piling of strategic and critical materials against the need of a future emergency; the development and expediting of joint procurement between the War and Navy Departments and is assigned policy control of all joint agencies lying between the services wherein they concern themselves with matters of this nature; and is also concerned and responsible for developing and expressing military interest of the services in all matters pertaining to our national import and export.

The Board, at present, is composed of its civilian chairman, Mr. Richard R. Deupree, prominent industrial head, the Under Secretary of War, Mr. Kenneth C. Royall, and the Assistant Secretary of the Navy, Mr. W. John Kenney. The routine of the Board and its operational functions are administered by an Executive Committee consisting of the civilian chairman of

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the Board, assisted by two deputy executive chairmen, one a general officer of the Army Major General Sidney P. Spalding, USA, and one a flag officer of the Navy, Rear Admiral Roger W. Paine, USN. The executive committee is assisted by a staff of about fifty Army and Navy officers and Civil Service employees drawn from the two departments. In policy matters, the Board is advised by a committee made up of the Chief of Staff of the Army, the Chief of the Army Air Forces, the Director of Service, Supply and Procurement of the War Department General Staff, the Chief of Naval Operations, the Deputy Chief of Naval Operations for Air, and the Chief of the Material Division, Office of the Assistant Secretary of the Navy.

Two Special Assistants Brigadier General Edgar P. Sorrensen and Rear Admiral Thomas B. Combs, aid the Executive Committee by reflecting the views of the Army and Navy Air Forces.

Assisting the Executive Committee in carrying out the responsibilities of the Board, supervising and coordinating the work of all subordinate elements to insure close liaison with appropriate agencies of the War and Navy Department and preventing unnecessary delays in the prosecution of the work of the Board is the Secretariat. Comprised of the Army-Navy alternates, Colonel Nathaniel M. Martin, C.E., and Captain G. M. Prevost, U.S.N.R., the Secretariat also insures the plans for the procurement of new items are integrated with the development of such items, maintains close liaison with the agencies responsible for research and development and keeps the Board currently informed on all such matters, along with making special and detailed studies or plans as directed by the Executive Committee or the Board.

One of the foremost of the ANMB projects is the Industrial Mobilization Plan, an instrument of progressive planning designed to evolve with the development of our industrial strength and scientific progress so that in the event of a national emergency, our industrial might and knowledge can be harnessed quickly.

Strong belief that the War Production Board, properly constituted, is to be the inevitable cornerstone of an effective industrial harness in any forthcoming emergency, the ANMB has authorized the creation of a group of distinguished civilians, selected from those with War Production Board experience in the late war, to develop a manual which will embody the organizational changes in the WPB structure considered necessary as the result of actual experience with the one which was developed in the midst of the war. This group will also make recommendations on a complete pattern for the war agencies which they feel will be necessary to be brought into being with the outbreak of war.

Planning of this nature will prevent a repetition of the confusion and frustration experienced by those representatives of industry who hurried to the capital early in the emergency to offer their wares for the defense of our nation only to run into the lack of proper agencies to utilize their efforts or to assign proper priority, etc.

Currently, and since the end of the war, the Army-Navy Munitions Board is aiding in a sensible disposal program for the disposition of war plants acquired by the government during the war, and is also aiding in the retention program—a project to create sufficient "stand-by" plants and other facilities to aid in "to war" conversion and wartime production. It has also completed and will promulgate shortly its pattern of all the inter-agency, service, and civilian industrial advisory committees it considers will be necessary to cover its industrial mobilization responsibilities. The pattern comprises about 75 committees covering the complete industrial field and under them will be created numerous sub-committees to handle specific detail and technical assignments.

Under the Executive Committee are four planning divisions, Materials, Products, Services, and Procurement, from which spring the numerous special committees and sub-committees which encompass all the problems involved.

Materials Division, which collates the military, naval, civilian, and allied requirements of materials, such as steel, copper, aluminum, etc., in an emergency, devises plans for production and supply of such materials, and is responsible for the development of stock piles. It is also concerned with the current study of underground sites, which have proven militarily expedient in modern warfare.

In the recent inspection of representative types of underground sites throughout the nation, conducted by the Corps of Engineers for the Army-Navy Munitions Board, the results of which have not been published, it has become evident to observers that, contrary to common conception, caves do not make the best underground sites for factory or storage use. The natural twists, variations of level, make for a great amount of reconstruction. Another detrimental factor existent in caves is high humidity, which is harmful to stored materials. It appears that mines and quarries are much more easily adaptable to industrial purposes desired in underground utilization. One observer, technically qualified, has noted that soft stone areas, of which there are plenty in the United States, rather than soil, make for better underground sites.

The importance of underground sites in modern warfare need not be amplified. In an atomic war, should the bomb not be outlawed in future warfare, utilization of below-surface facilities is a must. The effects of strategic bombing in Europe and Japan during the war have already proven that even in the use of the lesser weapons, underground factories and facilities are an absolute necessity. The good condition of such facilities in Germany after bombing which obliterated whole cities proves the greater impregnability of Mother Earth and, even now, as our Prep Agency prepares plans for such utilization, it is rumored that

another government, using war prisoner labor, has built the biggest underground airfield in the world in a highly dominating and commanding area, which has a great, semi-global, air striking potential. Great Britain's enormous, mile-long, underground factory, which withstood the rigors of the Battle of Britain, is a monument of the strength of below-surface spaces.

In the study of underground sites, one Corps of Engineers colonel put forth a plan substituting American machinery for hand labor in the Japanese "cut-and-cover" techniques for building concrete shelters, miniature hangars, and sub-terrain storage facilities. The Jap technique allows for rapid construction with a maximum use of natural formation and permits concrete construction without forms.

In the stock-piling planning, when the President approved Public Law 520, which authorized $100,000,000 to ANMB to begin stock-piling of materials essential to our national security, it is estimated that around $300,000,000 will be needed for this purpose during the fiscal year. The hundred million dollars was granted during the wind-up of the last session of the 79th Congress under the stock-piling act which contemplates the accrual of scarce but essential items at a cost of around $2,100,000,000, to be spent over a five-year period.

To date, the Board has formalized the stock-pile objectives, year by year, as to composition and requirements, and has determined and directed the purchase of the first year's increment after clearance by State, Commerce and Agriculture Departments and CPA. The Board is developing a supplemental list of items for additional purchase in fiscal 1947 for presentation to Congress for approval, and has also contacted many industrial associations which concern themselves with metals, minerals, and materials, and plans continued consultation with qualified industrial groups in carrying forward its stock-piling programs.

In the initial stock-piling stage, ANMB is concerning itself primarily in drawing from the nation's vast surplus supply of war materials. From this stock are being drawn essential materials necessary to national security, but even in this early stage, the ANMB must keep its eye on our piles of other essential materials, an element which must cause them and the industrialists of the nation great concern because many of these items essential to the stock pile are desired by industry for civilian manufacture. Relative to this dilemma, Mr. Deupree, head of ANMB, stressing that every precaution is being taken not to cripple civilian economy, said nevertheless that an industrial mobilization and stock-piling program is definitely in the making, indicating that certain materials, although critical in civilian production, must be maintained in the stock pile against an emergency.

In stock-piling, the ANMB, by transfer from war surplus and purchase, assembles huge stocks of critical and essential items and materials. Of these, some are lasting and remain a stable stock, some become obsolete and must be replaced, while those with a tendency to become stale, lose strength, or perish are rotated—turned back into market and replaced with fresh and vital material. When purchasing or selling for the pile, the Board conducts its market activities in a quiet manner in order to frustrate attempts to speculate on these activities and also to prevent a physical effect on either the national or world market.

Other national resources, although not assembled in the stock pile, actually are earmarked in "paper consideration" so that, if needed, their source and manner of procurement will be but a simple manner of reference and execution.

The Products Division, which collates the military, naval, civilian and allied requirements for manufactured products in an emergency, devising plans for the production of such products, makes recommendations to the Board concerning the modification or abandonment of existing facilities, the development or construction of new facilities and the allocation of existing industrial capacities in an emergency. One of the causes responsible for the creation of this committee is the entangled problem of producing for more than one service and one nation.

The Procurement Coordination Division supervises and coordinates all phases of procurement by the services wherever joint requirement exists, preventing duplication of effort, eliminating competitive bidding between the War and Navy Departments, insuring equitable distribution of production and further standardizes design, contract procedures and procurement specifications.

In joint-procurement for the services, standardization of items between the services is a major problem, and the standardization of any item or class of items is given careful attention. For example, in a radar set of similar operating characteristics, the Army must have dust protection, while the Navy sets must be of comparatively small size and resistant to gunfire shock. Differences such as these must, if they possibly can, be reconciled.

However, despite the difficulties, a considerable amount of progress has been made. The volume purchase of food and lumber is already integrated, and, in textiles and clothing, footwear and petroleum products, there is close collaboration between the services in the buying operation. The most notable progress is in the field of medical and surgical supplies. The services have not only established a joint buying office in New York, but have succeeded in standardizing about 85 per cent of the items each of them use.

On October 15 of this year, President Truman approved an amendment to the authority of the Army-Navy Munitions Board, the principal effect giving the Chairman of the Board authority to assign to either the War or Navy Department or to a joint agency the procurement of any item purchased for the use of either or both services.

In connection with this approval, the President stated that concentrating in one agency the procurement of each type of common or substantially similar items by the armed services will mean an undoubted savings in money and personnel for the government and will simplify the furnishing of supplies and munitions by industry to the armed services. This authority also includes the power of final decision in the event of disputes between the two departments arising out of the determinations made by the Chairman of the ANMB. Such decisions will be binding on both the War and Navy Departments.

The fourth major division of ANMB, "Services," is charged with formulating plans for the development and control of manpower, transportation, electrical energy and other services required for the mobilization of industry in an emergency; to act as a liaison between the Board and government agencies dealing with finance, price or manpower control, transportation, public relations, or economic warfare, and to supervise and coordinate the preparation of plans for the establishment or activation of such agencies as would be required in an emergency.

"Decentralization of industrial facilities," a much discussed subject by contemporary strategists, either industrial or military, is another subject of interest to the Board.

Modern warfare, which places the whole of the United States within striking distance from many foreign points emphasizes the importance of such decentralization. The Board, in recognizing the importance of decentralization, is making a study of the extent to which Industry is centralized and is doing everything possible to foster dispersal of new and/or future additional plants and facilities to strategically decentralized locations.

Recently the ANMB was given another great responsibility when it was charged with the responsibility for determination of the military interest in national import and export. Because of this, the Board holds membership on inter-agency State Department committees which concern themselves with different phases of economic foreign policy and its members have been active in steps being taken to conserve our national resources.

As evident from the foregoing definition and analysis of the Army-Navy Munitions Board and its activities, the ANMB is a great network of committees whose studies reach into every possible phase of our national structure to bring forth elements for the protection of our national security and to construct the machinery which will make our nation capable of a quick swing to prepared strength in the event of a national emergency. The Board, in acceptance of all these duties, is acutely alive to the great responsibilities it has assumed. It realizes that there must be evolved, in peacetime, practical and well-understood mechanisms whereby in a minimum period of time the nation can effectively get into high gear at the beginning of an emergency to produce the requirements of war. These essential mechanisms cannot be evolved or executed with dispatch without the complete cooperation, support and understanding of government, industry, and labor.

The Army-Navy Munitions Board, now, as it goes into full-grown action, is indicative that our nation has reached the end of that indifference of thought and action which has heretofore left our nation inadequately prepared to defend itself. The "Prep Agency," of the United States, with its "gathering" activities, will meet any future emergency just as the squirrel meets the winter—PREPARED.

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Tuberculosis is a deadly killer. Nearly 55,000 Americans die of it each year . . . six every hour. In Washington, in every 16 hours some one dies of tuberculosis and during each day five new cases are reported. Your Tuberculosis Association, supported by Christmas Seals, fights to stop this useless waste of life. Stand behind it in this fight. Buy and use Christmas Seals . . . as many as you can.

Strength Report On

Armies of the World

by Major Hal D. Steward

PEAK strength of the Russian Army at the height of World War II was reported to be 20,000,000 persons. Today that is no longer true because Russia, like other Allied armies, has been demobilizing her military forces since the end of the war.

No army in the world today stands anywhere near the top of its wartime strength.

Just prior to V-E Day the United States had 8,300,000 men. Today it has just over a million.

This report on the Armies of the World does not pretend to be completely accurate in its figures. The information included in this article was gathered from numerous sources. Some were highly accurate and others were probably greatly in error. This must be taken into consideration when trying to compile a report on the strength of all the major powers in the world today.

It is widely known that Russia maintains extreme secrecy about the strength of the Russian Army. Any figures on Russian forces can be grossly inaccurate. However, from information available a rough idea of the size of the Russian Army can be given.

Of the five big world powers Russia has the largest army, which is reported to be around 3,000,000 persons. China comes next with about 2,700,000 regulars in the National Army; Britain is third with about 1,500,000 men; United States fourth with 1,100,000 men and France fifth with about 150,000 men.

Both Britain and the United States are following the same policy of trying to build a volunteer army of approximately 1,000,000 men by July 1, 1947. China, of course, is maintaining an army of large strength because of internal trouble. France is still in the process of reorganizing her army, and Russia is reported to be increasing her military strength, but so far that is hearsay.

Military training begins in Russia at the age of 12 when elementary courses are given for two hours each week. Compulsory training begins at 16 and continues to 50.

Estimated population of Russia including the Baltic Republics, occupied Poland and lands returned by Rumania to the U.S.S.R. was about 195,000,000 in 1940. Besides Russia Proper, which has a population of approximately 110,000,000 there are 16 Union Republics that go to make up Greater Russia and bring its total population near 200,000,000 persons.

Russia is said to have a potential military strength of some 40,000,000 persons. This means that Russia would muster into service all physically fit male and female persons between the ages of 14 and 50.

No information is available on the Russian Air Force although they were reported to have had 4,000 planes at the beginning of the war. The Russian Navy consists of only three battleships and smaller craft.

France's army, which today is still being reorganized, will have 55,000 men for the United Nations Force, 50,000 for the Army, 80,000 for the Air Force, and 60,000 for the Navy. France has also 1,000 planes all of which were given her by the United States.

China during the war had about 6,000,000 men in service. Today she has nearly half that number still under arms. Communist China is reported to have nearly a million men in service. It is hard, however, to obtain any accurate figures on Chinese forces as each Warlord has his own army of undetermined size.

One of the large armies of today is maintained by Yugoslavia, who is reported to have nearly 800,000 persons in her army, of which 10 per cent are women. This army is an outgrowth of the guerrilla army that was organized during the war. The Air Force is in the process of being rebuilt. The Navy was completely destroyed in the war.

Spain has been out of the military limelight since the Spanish Civil War, but today she has an army of 10 Corps numbering about 300,000 men.

Brazil, only South American country to send a large expeditionary force overseas to fight in World War II on the side of the Allies, had about 1,000,000 men under arms during the war. Brazil subjects all males between 18 and 45 to military duty under a selective service system. Permanent peacetime strength of the Brazilian Army is reported to be around 100,000 men.

Service in the Argentina Army is compulsory from 20 to 45 years of age. The men belong to the First Line Army for the first 10 years, then pass to the National Guard for 10 years and close their service with five years in the Territorial Guard, mobilized only in the event of war. Argentina maintains a peacetime trained reserve of 300,000 men.

Regular Army strength of Argentina is supposed to be around 45,000 men; however, it is reported that she had nearly half a million men in active service during World War II.

Here is the reported strength of all the American countries: Argentina, 45,000; Brazil, 100,000; Chile, 40,000; Colombia, 10,000; Costa Rica, 500; Cuba, 15,000; Dominican Republic, 4,000; Ecuador, 6,000; Guatemala, 6,000; Haiti, 5,000; Honduras, 2,500; Mexico, 50,000; Nicaragua, 3,500; Panama, no information; Paraguay, 3,000; Peru, 35,000; El Salvador, 3,000; Uruguay, 8,000; Venezuela, 10,000; Bolivia, 15,000.

THE RUSSO-GERMAN

by Captain F. N

PARW

(EDITOR'S NOTE: *In the September-October issue Captain Fitzgerald surveyed briefly the organization and background of the Red Army, proceeding then to discuss the German campaign against Kiev in the early autumn of 1941, the advance to Stalingrad in the following summer, and the Russian counteroffensive during the winter of 1942-43. He now goes on to outline the major operations on the Eastern Front from 1943 until the summer of 1944.*)

THE BATTLE OF KURSK—JULY, 1943

THE pattern of the Russo-German war during the first three years had a seasonal appearance. Each summer the Germans advanced, each winter the Soviet armies took the initiative. After the Russian winter offensive of 1942-43 the German front was straightened and considerably shortened, and in March a German attack recaptured Kharkov. By early summer the Red Army held a salient between the Valdai Hills and Bielgorod. Orel and Kharkov, north and south of the salient, were still in German hands. Kursk and the territory to a distance of fifty miles west of it was Russian.

In 1941 and 1942 German strategy had been directed towards the total defeat of the Soviet Army. The Wehrmacht's offensive of 1943 was more modest, initially aiming only at the elimination of the Kursk salient. The immense losses in men and material which the Germans had suffered in the Stalingrad campaign in the previous year compelled the High Command to modify its ambitions.

The terrain of the Kursk salient was elevated but not close. A number of rivers have their headwaters in the hills near Orel and on the plateau north of Kharkov, and the stream beds tend to limit maneuverability to a certain extent. Woods are few.

North of the salient were the Armies of General Popov, at that time building up for the first Russian summer attack, which was to be launched against Orel in July. The Kursk sector was defended by General Rokossovsky, with General Vatutin's forces on the left about Oboyan. General Konev stood on the eastern bank of the Donetz opposite Kharkov (*see map of Kursk area*).

The Germans concentrated picked units north and south of the salient with the intention of driving behind and isolating Kursk. In the north was the Third Panzer Army, comprising four panzer divisions (equipped with some of the new *Tiger** tanks) and six motorized and infantry divisions. In the south another Panzer Army, commanded by Von Hoth, contained seven panzer divisions and six motorized and infantry divisions. Strategic reserves totalling six panzer and seven infantry divisions were held at Orel and Sumi. Thus over 500,000 men and a considerable quantity of heavy material was available to Field Marshal Von Kluge for the 1943 operation. The numbers could not be compared with those employed in the Stalingrad campaign, but the mission was very much more limited in scope than that given to Von Bock in the previous summer.

The offensive opened on both flanks on July 5, 1943. Massed tanks, supported by artillery (much of it on self-propelled mounts) drove through the fortified zones to a depth of ten miles in the first three days of the battle. In the north panzers took Malo Archangelsk after a stiff fight, but the Red troops defended the flanks of the German corridor and prevented the panzers from deploying to left and right of the town. After a pause for reorganization another attempt was made to enlarge the Malo Archangelsk wedge in the direction of Poniri. This was also held. A new assault was opened along the Kromi-Fatezh road, but the Russian network of trenches and fortifications obliged the attackers to abandon the attempt. The Russians held their positions in great depth and did not retire from the flanks of the German wedges. Holding the "haunches" of the penetrations, the Red troops threatened the communications of the German spearheads and thus contained large infantry formations which would otherwise have been available to support the leading elements of the attack. This was the *tactical* application of what the Russians had done *strategically* at Voronezh and Stalingrad. The theory is obvious, but it requires courage and tenacity on the part of the defending troops and good judgment on the part of their leaders to apply it on the battlefield.

On July 11th the direction of the German effort was changed and two fresh panzer divisions (probably drawn from the operational reserve at Orel) advanced eastward through Zmievka against General Popov's left wing. Here the attacking troops met with even less success than previously. During the following three days the battle in the northern sector continued, but signs of German exhaustion soon became apparent. The panzers in particular had suffered heavily in their efforts to open the narrow gaps they had forced through the defenses; about 1,000 tanks and a large number of men were presumably lost in the struggle.

In the south the pivot of the first attack was Bielgorod.

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*An Cosantóir, Irish Defense Journal.

*The *Tiger* tank was first used in Tunisia in February, 1943. The early models of this German "Infantry" tank weighed 54 tons and were armed with a long-range 88-mm. gun. The later *Royal Tiger* weighed over 60 tons. See also footnote in Part I of this article, in last issue.

N BATTLES — 1941-1945*

F. N. Fitzgerald

ARWO

Some success was gained along the Bielgorod-Kursk railway line but all movements towards the strongpoint of Oboyan were held. By July 10th both Von Hoth and Vatutin had suffered heavy casualties.

Between July 10th and 15th, Von Hoth's panzers penetrated to the heights near Rzhava where a large-scale tank battle developed. As at Malo Archangelsk the Germans retained their narrow corridor but were unable to enlarge it. Von Hoth now turned his attention to the Kotocha area where he succeeded in making an initial advance but was held on the high ground near Shebekino. By July 21st the Germans realized their defeat—the offensive in the north had ended almost a week earlier—and began to withdraw from the advanced positions at Rzhava and Shebekino.

On July 12th, General Popov launched an attack on the Orel area. In the first three days his Army penetrated thirty miles, but the German panzers which were committed north of Kursk succeeded in disengaging, and, battered though they were, four tank divisions reached the Orel approaches on July 20th in time to cover the city. From that date the advances by Popov's troops were achieved by hard fighting.

Rokossovsky similarly regained the initiative and by July 18th had retaken Malo Archangelsk. Farther south General Vatutin rapidly cleared the German corridors into his position and by July 24th the Kursk salient was firmly re-established. The German summer offensive, which lasted less than three weeks, was followed by a Russian offensive north and south of Kursk. On August 3rd Bielgorod was captured by General Vatutin's columns. On 23rd, Kharkov was taken after a bitter struggle. In the north Popov entered Orel on August 5th. The Soviet armies had the line of the Dnieper River as their objective and by late autumn they had achieved it.

The Russians claimed to have inflicted about 100,000 casualties on the Germans and to have knocked out over 2,000 tanks. Even allowing for Soviet exaggeration, the injury to the German attacking forces in the Kursk operation must have been enormous. At least eight panzer divisions were so badly mauled that they were hardly recognizable as divisions, and they had to be withdrawn from the front for reorganization.

The Kursk battle showed the same characteristics as Von Arnim's campaign in Tunisia some months earlier, and as Von Rundstedt's Ardennes offensive in December, 1944. The German commanders were no longer seeking a decision, they were fighting a delaying action by means of local attacks.

There was no surprise about the Kursk operations. Both sides were fully aware of the movements and concentrations of the enemy. The Germans hoped to effect a breakthrough by weight of metal alone, but the Russian defenses were too strong and the Red Army commanders had learned the importance of unyielding defense, even when the flanks of the position are gone.

The selection of the corners of the salient as the points for their dual attacks was not novel to the Germans. The maneuver, often wrongly described as the *"Cannae manoeuvre,"* is a common one in war and a traditional one to the Germans. Strategically, it was used in Poland, Yugoslavia, and Kiev (to mention only the major examples of World War II); tactically, Rommel attempted something similar at El Alamein (his was, in fact the true *Cannae* plan, although through the action of Alexander and Montgomery it did not succeed).

The Russians timed their counteroffensives well, but as before Stalingrad, the Soviet commanders appeared to lose their grip of the situation once their armies had jumped off in attack. Certainly, they gained great successes during the remainder of the summer and autumn of 1943, but at the start of the advances there was every likelihood of even greater achievement. Time and time again they permitted whole German pockets to slip through their hands, through lack of coördination and an inability to alter the direction of the advance at will.

Tank-Cavalry Coöperation Across the Mius—1943

In the Amiens offensive of 1918 the Allies experimented with the use of horse cavalry supported by tanks. The experiment was a failure and observers promptly concluded that mechanization and horseflesh could not be blended. Events in Poland in 1939 appeared—at any rate superficially—to confirm this view. But in the campaigns of 1942 and subsequently the Soviet armies showed the fallacy of this belief.

A notable example of tank-cavalry coöperation occurred during the Russian summer offensive of 1943. While the battles for Orel, Kursk and Kharkov drew the attention of both Russian and German commanders northward there was little activity in the Stalino-Rostov area. As a result when the Soviet armies in the north advanced westwards a re-entrant was left in the Russian front south of the Donetz. On August 22nd the Russian Supreme Command decided to advance Tolbukhin's Army which formed the Soviet left wing. The main struggle farther north had engaged the greater part of the opposing forces and neither Tolbukhin nor the Germans facing him could concentrate large numbers of troops for the operation.

Tolbukhin already held a small bridgehead across the River Mius. On August 22nd the Russian general launched an attack from this bridgehead and cut the Stalino-Tagenrog railway near Amvrosievska. Tolbukhin's tank-cavalry teams now headed southwestward toward the seacoast and Mariupol. By 27th the Germans were in full retreat and the southern bastion of the defense, Tagenrog, was isolated. Three days later it was taken by storm.

The normal employment of the combined tank and cavalry units was, naturally, in open country where large areas could be traversed with little opposition. The capture of the railway at Amvrosievska, which placed Tolbukhin's troops in the rear of the Tagenrog lines, permitted their employment in this manner. Crossing the flat plain the tanks were usually given the task of covering the flanks of the mounted troops. When opposition halted the cavalry, tanks from the reserve went into action, acting as mobile artillery and clearing the hostile strongpoints. When, in the latter stages of the operation, the German counterattacks were coördinated and heavy weapons were brought into action, the cavalrymen dismounted and fought as infantry—or, more accurately, as *dragoons*. The tanks dug in and served as pillboxes in support of the dragoon-manned trenches. Tank-groups were also held in rear to serve as mobile reserves. When the Russian advance was held by the defenses on the Gruzskoy River, the Red commander concentrated all the armor at one point and made a heavy tank attack. As the tanks broke through the German lines the cavalry followed up and exploited the gap.

It will be noted that four separate missions were given to the armor of the tank-cavalry teams. In an advance over open undefended country the tanks served as flank-guards. Tanks were used as supports and reserves for the lightly armed horsemen. Tanks and dismounted cavalry fought in defense. When stiff opposition was met the tanks forced a breach which the cavalry then exploited. In so far as the Cossack horsemen acted as infantry when the need arose they could be styled *dragoons*, but their normal mission was a cavalry one of exploitation; they were not equipped to hold terrain against serious assaults or to attack major defenses.

Tolbukhin's campaign was not the first attempt by the Russians to combine armored and cavalry tactics, but the large scale of the operations attracted widespread attention. Tank-cavalry coöperation was not always as successful, and in 1944 Marshal Malinovsky suffered a serious setback in Hungarian Transylvania through over-dependence on these teams.

Orsha and Bobruisk—1944

By the summer of 1944 the Russian southern front was far in advance of the northern. An immense salient had been formed south of the Pripet Marshes, its apex reaching to Lwow and Kovel (in pre-1939 Poland) and its left flank resting on the Dniester and the eastern slopes of Carpathian Mountains. The Pripet Marshes effectively cut the southern fighting zone from the northern sector so that in fact the two areas were independent of one another, but it was not possible for the Red forces to extend the salient in South Poland and farther west until their comrades had advanced over the Upper Dnieper and thus straightened the front once more.

Through the months of May and June the preparations for the northern offensive were made. On June 22nd the attack was launched along the entire front from Vitebsk to Zhlobin. The Soviet drive followed the route taken by Kutusov and Tschitschagov as they pursued Napoleon in the winter of 1812; the ultimate objective of the 1944 advance being—as Kutusov's had been—to seize Minsk and cut off the hostile armies north of the River Niemen. The initial tasks were therefore the seizure of Vitebsk, Orsha, Mogilev and Bobruisk.

The Soviet Army Groups (or *Fronts**) were given objectives as follows: General Bagramian's *1st Baltic Front* and General Chernyakovsky's *3rd White Russian Front* were to attack Vitebsk; Chernyakovsky's left wing was responsible for the offensive against Orsha; Mogilev was to be assaulted by Colonel-General Zakharov's *2nd White Russian Front,* and General Rokossovsky's *1st White Russian Front* was to move against Zhlobin and Bobruisk.

The German *"Panther Line,"* which had been prepared and fortified during the spring, ran northward along the Dnieper from Zhlobin to Orsha and thence along the Orsha-Vitebsk railway to the River Dvina. The defenses consisted of a series of fortified trench systems, covered by minefields and wire obstacles. They were repeated at intervals, to give depth to the defense, and at some places the belts of trenches extended for seventy miles in depth. The trenches were continuous, and one German humorist stated that it was possible to walk from Leningrad to the Black Sea without appearing above ground level.

The German *Central Russian Group,* commanded by Field-Marshall Busch, consisted of four Armies. In the north the Third Panzer Army was held near the River Dvina; the Orsha-Mogilev sector was defended by the Fourth Army; the Ninth Army covered Bobruisk, and the Second Army watched the northern flank of the Russian salient into Poland from the neighborhood of Pinsk.

Orsha was defended by the XXVIIth Corps of the Fourth German Army. One motorized and three infantry divisions were disposed along the *"Panther Line"*

*These *Fronts* or *Army Groups* are misleading, if one attempts to compare them with the *Army Groups* of the Western Allies. The Soviet *Fronts* were in actual fact only comparable to a British or U.S. *Army.*

For the purpose of the record, the Russian *Fronts* about this time were (from north to south): Leningrad Front, Volhovo Front, 2nd Baltic Front, 1st Baltic Front, 3rd White Russian Front, 2nd White Russian Front, 1st White Russian Front, 1st Ukrainian Front, 4th Ukrainian Front, 2nd Ukrainian Front, 3rd Ukrainian Front.

where it left the course of the Dnieper, and eight brigades were in reserve before Orsha. The right wing of the Corps rested on the river, the left ran across marshy ground and woods (*see map of Orsha and Bobruisk*).

On June 23rd the Soviet attack was mounted. The main effort was made north of the Dnieper, against the left of the XXVIIth Corps. The first line of trenches and part of the second were taken by the Russian infantry-artillery teams in concentrated attacks. Although the defenders committed some tanks and self-propelled artillery, their counter-efforts failed to close the gaps driven by the Red troops.

On the next day the Russians resumed their advance across the marshy ground, driving a salient ten miles deep and ten miles wide. Having room now to maneuver and being on firmer and more open terrain, Soviet tanks and self-propelled guns were sent into action. These finally broke through the defenses and turned the flank of the German division. German reserves were thrown in, supported by a number of tanks, but the Soviet infantry had moved in close support of their armor and had consolidated the ground won. On this day, too, events farther north were favorable to the Russians; between Orsha and Vitebsk another breakthrough had been achieved which further jeopardized the German position.

June 25th saw the heaviest fighting about Orsha. A series of German counterattacks resulted in large-scale battles in which the armor of both sides played an important part. But by evening the Russians retained the initiative and the final breakthrough was accomplished; advances of up to fourteen miles were made and on the 26th Soviet armored and motorized units were well to the west of Orsha, where they cut the German communications with Borisov. The city was now isolated. East of Orsha Soviet forces crossed the Dnieper below the river-bend and on the following day the city was taken by the converging attacks of Red Army troops from east and west.

On June 24th, the day after Chernyakovsky's assault on the Orsha position opened, the 1st White Russian Front commenced the attack on Bobruisk. The line here ran from the south of Gomza to the Dnieper near Zhlobin and thence to Rogachev. The first line consisted of five or six continuous trenches protected by mines and tank barriers. The defenses were manned by elements of the Ninth German Army and comprised two panzer and eleven infantry divisions, supported by other arms. Bobruisk itself was prepared for defense.

As the Russians already held Rogachev it was probably expected that the main effort would come from the Druth line. On the night of June 23-24th Russian troops bridged the Druth north of Rogachev, under heavy German artillery fire, but at the same time the main attack was launched in the south, near Shatsilki. By evening of 24th these southern columns had captured the first line of German trenches and had actually broken through south of Parichi on a front of eighteen miles and to a depth of six miles. As soon as the gap was secured Soviet tanks were sent through and entered Gomza on the same day. The Germans counterattacked from Parichi, committing panzers against the flank of the Russian wedge, but the Red troops held their ground.

On the next day one Russian mobile column moved from Gomza toward Glutsk while another advanced northward along the Gomza-Bobruisk railway. The Germans continued to counterattack west and south of Parichi but the Russian troops had consolidated their position and suffered no serious loss of ground.

During June 25th the Soviet infantry had been following the armor, but the tank formations were moving so rapidly that they were soon more than ten miles ahead of the supporting troops. On 26th, while the infantry approached Brobruisk from the south, Russian armor was already north of the city on the west bank of the Beresina. Bobruisk was surrounded.

Soviet tanks also penetrated to Glutsk, which was captured on the evening of 26th.

On the west bank of the Druth, near Rogachev, the fighting was more severe, and it was not until June 26th that the Russians reached and crossed the River Dobysna. Then tanks were thrown in on a narrow front and swinging northwards, succeeded in cutting the road to Mogilev. This move toward the north turned the flank of the defenses and Startzy was rapidly captured. By evening the tank columns were on the east bank of the Beresina, only two miles from Bobruisk. On the following morning the infantry joined the armored units here.

By June 27th the Ninth German Army was cut in two. The portion west of the Beresina was trapped in Bobruisk while the troops on the east bank were forced southward from the neighborhood of the city. A large-scale counterattack by the latter group (the XXXVth Corps, containing one infantry and two panzer divisions) sought to break through the encircling Russians towards the north, but the Soviet forces defended stubbornly, using their armor as improvised pillboxes. On the next day the Russians closed in from north, south and east and by afternoon the entire pocket was liquidated.

On the night of 28-29th the German units in Bobruisk made an attempt to escape from the city. Infantry and panzers attacked in a northerly direction, at the point where the investing forces were weakest. Some tanks succeeded in passing through the Russian cordon, but most of these were rounded up during the subsequent "mopping-up" operations. The remainder of the Germans were held in the city despite their numerous efforts to escape, and on June 29th—two days after the fall of Orsha—Bobruisk was taken.

The similarity between the Orsha and Bobruisk operations is striking. In both cases the defenses were partly along a river and partly across open country. In both cases the Soviet main effort was made so as to

avoid a river crossing. In both cases the armor of the main effort broke through to the rear of the town, so that the defenders were taken from behind by tanks and in front by infantry. Tactical encircling moves of this type were carried out again and again as the Russians approached defended cities and strongpoints.

The Russian use of dug-in tanks as pivots for the defense was not original, for the Germans had long since learned to appreciate the value of panzers used in this manner. As the war progressed all the belligerents tended more and more frequently to use their armor thus, for as the caliber of the weapons mounted on the tanks grew larger the value of tanks as artillery pieces became increasingly apparent.

Undoubtedly Soviet air superiority was an important aid in this offensive. The casualties inflicted on the ground forces by aerial attack were negligible, but the Germans were prevented from maneuvering in the open (where there would have been heavy casualties) and were thus pinned down and easily dealt with. Air support was concentrated against the German XXXVth Corps pocket east of the Beresina and both disorganized the German efforts to break out of the encircling ring and made the final task of mopping up by the Soviet troops much simpler.*

The terrain on the upper reaches of the Dnieper was less favorable to armored movement than the southern steppes, being broken with marshes, woods, small streams and occasional ravines. Soviet tank commanders learned that even where there was little or no opposition it was more economical to avoid these obstacles which would delay the advance. In the attack on Bobruisk some of the columns which by-passed the city to the west increased their journey by as much as one-third the distance in order to escape broken ground of this nature.

*Russian *Stormovik* armored aircraft were employed for tasks of this nature.

The June offensive brought rich results to the Red Armies. Vitebsk, at the northern end of the *"Panther Line,"* fell two days before Orsha. Slutsk, the next important communications center after Bobruisk, fell on June 30th. Converging columns took Minsk on July 3rd. Brest-Litovsk was finally captured on July 28th and the northern and southern fronts, now in line, made contact west of the Pripet Marshes.

The fact that the four key points of the *"Panther Line,"* Vitebsk, Orsha, Mogilev and Bobruisk, could be taken in so short a time may appear strange in view of the German efforts at defense. Physically the defenses were undoubtedly very powerful. But two factors played against the Germans. The first was the knowledge that the *"Panther Line"* represented in fact the apex of an immense German salient, whose right rear, over three hundred and fifty miles to the southwest, was already threatened by the Soviet advances in Poland. With the Red Army knocking at Germany's front door, the troops holding a defense line miles away in Russia could not help but feel that they were wasting their time. Furthermore, although the lines of trenches were prepared and the obstacles erected, the manpower of the defenders was sadly deficient. To speak of "divisions" is misleading, for the German division was a unit much understrength in 1944.

The second factor in the rapid penetration of the *"Panther Line"* is a corollary of the first. As the German forces grew weaker the Russian grew so much stronger. Battle-trained men and fresh recruits were pressed forward in hundreds to fill the Russian establishments. Also the situation with regard to equipment was easing rapidly, as more and more material was delivered to the Army commanders from the three sources of supply—the Russian factories, the Western Allies and the captured German depots.

(To be concluded)

. . . The Field Marshal (von Schlieffen) . . . always endeavored . . . to keep alive in the General Staff and thus in the army at large, the idea of a war of annihilation. . . . Hence in his writings he often attributes his own ideas to the leaders of the past—among them Moltke—when he wishes to prove that to achieve a decisive victory of annihilation, *outflanking*—preferably from two or three sides—must be resorted to as Hannibal did at Cannae. Modern battles, Count Schlieffen characterizes even more than earlier battles as a "struggle" for the "flanks." . . . Except for Tannenberg, a real Cannae did not occur in the World War. That one did not occur in the West at the beginning of the war is the fault, in the first instance, of the Supreme Command. Indeed, it was the Schlieffen Plan on which our operations were based, yet in their actual execution it was departed from. His constant exhortation to make the right flank as strong as possible was not heeded.—BARON VON FREYTAG-LORINGHAVEN, General of Infantry, German Army, 1925.

Armored Task Forces*

*by Lieutenant Colonel Patrick H. Tansey, Jr.***

THIS article is not an attempt to justify the use, formations and tactics of armor as employed in the European Theater of Operations, but to present in general a clear idea of one way the armored divisions actually fought through France, Belgium, and Germany. Before we start, let us first of all understand the meaning of the term "Armored Task Forces."

Normally the combat commands of the armored divisions were divided into two or three small forces of combined arms—these were called task forces. The combat elements of an armored division consisted of three tank battalions, three armored infantry battalions, three armored field artillery battalions, one armored reconnaissance squadron, one armored engineer battalion, plus the normal attachments of one tank destroyer battalion, and one antiaircraft automatic weapons battalion self propelled, plus attached field artillery varying from one battalion to a group.

The armored divisions were normally subdivided into three equal combat commands. The average combat command was composed of a headquarters and headquarters company, combat command; one tank battalion; one armored infantry battalion; one armored field artillery battalion, either attached or in direct support; one armored engineer company; one tank destroyer company; and one battery, antiaircraft artillery automatic weapons, self-propelled.

Most of the thirteen light armored divisions in the European Theater of Operations (2d and 3d Armored Divisions under T/O&E 17, 1 March 1942 are considered heavy armored divisions) normally used the following type of task force organization at one time or another. The combat command (CC) was divided into two task forces (TF). The remainder of the tank destroyer and armored engineer companies, and the entire antiaircraft automatic weapons battery composed the combat command reserve. The armored field artillery battalion was placed in direct support of both task forces. We see that TF 1 was heavy in tanks, having two medium tank companies to one armored infantry company. TF 2, on the other hand, was heavy in infantry, having two armored infantry companies to only one medium tank company.

TF1[1]	*TF2*[2]
TK Bn (-1 Med Tk Co)	Armd Inf Bn (-1 Armd Inf Co)
1 Co Armd Inf	1 Med Tk Co
1 TD Plat	1 TD Plat
1 Armd Engr Plat	1 Armd Engr Plat

[1]This TF is commanded by the CO of the Tank Battalion.
[2]This TF is commanded by the CO of the Armored Infantry Battalion.

The fact that these task forces were unbalanced was a disadvantage since the CC commander seldom knew what type of resistance he would encounter in his zone of action before he committed his TFs to specific routes. Often he discovered that it would have been better to have had these TFs switched, but by the time that information was known it was too late to make the change. An equal proportion of tank platoons to infantry platoons would have been more desirable, but could not be obtained without splitting front-line companies, which proved unfeasible due to administrative difficulties. The big advantage that this task force possessed was the fact that it contained all the combat arms in sufficient proportion under a definite commander, a battalion commander who had the necessary staff, communication, supply and administrative facilities from his own battalion headquarters to assist him in maintaining control.

The organization of the armored division into task forces proved itself to be especially adapted for pursuit when the terrain and roadnet permitted. Armored divisions with two combat commands abreast—each having two task forces abreast—can cover wide fronts, the distance between the task forces being limited to the range of the artillery in support. This means that the division, marching on four routes, is provided great flexibility in being able to bypass strong resistance encountered on any one route.

The march formations of armored task forces were organized as follows:

TF 1		*TF 2*	
Advance Guard	*1 Med Tk Co 1 Armd Inf Plat Assault Gun Plat (Tk Bn) 1 Armd Engr Plat	Advance Guard	*1 Armd Inf Co 1 Med Tk Plat Assault Gun Plat (Armd Inf Bn) 1 Armd Engr Plat
Flank Guard	1 L Tk Co	Flank Guard	MG Plat (Armd Inf Bn) Rcn Plat (Armd Inf Bn)
Main Body	*Hq & Hq Co (-) Tk Bn *Med Tk Co Armd Inf Co (-) TD Plat Medical Det Maint	Main Body	*Hq & Hq Co (-) (Armd Inf Bn) *Armd Inf Co Med Tk Co (-) TD Plat Medical Det Maint

*Artillery Forward Observers Accompanied.

*Military Review.

**Instructor, Command and Staff College.

Now let us look at the advance guards since most of the fighting was done by them. We see that it is commanded by a company commander whose company is the main fighting force—either tank or armored infantry. There is a platoon of tanks or infantry to work with this company. The point usually is a platoon of tanks and a platoon of armored infantry. The advance guard commander has an artillery forward observer with him. The 105mm assault gun platoon is with the advance guard to assist in eliminating road blocks by direct fire. An engineer platoon is with the advance guard for the same purpose—to eliminate road blocks by direct action, that is, to clear minefields and booby-trapped road blocks as rapidly as possible, and to assist in bypassing small blown bridges by selecting, improving, and maintaining fords. Having these attachments well forward with the advance guards saves a great deal of time, and enables the armored columns to keep hot on the enemy's heels. As in all advance guard action, these task force advance guards were committed rapidly and aggressively. Usually when the main body was committed it too was employed with speed—many times directly from march column.

As far as can be determined by the author from after action reports of the armored divisions operating in the ETO, the assistance which the task forces gave one another was indirect rather than direct in most cases. By this I mean that if TF 1 of a combat command was stopped by strong enemy resistance and TF 2 managed to get through, then it kept driving forward, usually causing the resistance in front of TF 1 to withdraw by the mere threat of TF 2's location. There was another reason for indirect rather than direct support—this was the air support provided for the armored columns by the Tactical Air Command. If a TF was stopped by strong resistance, an air strike or two on the enemy position would jolt him sufficiently to enable the TF to continue forward. It is difficult enough to coördinate an air strike without having to worry about a friendly column coming into the target area from the enemy's rear or flank. Besides, it is faster to get a strike than to have a column change direction and get set for a coordinated attack.

Let me quote an historical account of a fine example of efficient task force operation by the 6th Armored Division in pursuit operations.

"During the drive into Central Germany the 6th Armored Division was directed to seize Mühlhausen, a city of thirty thousand inhabitants.

"On the night of 3-4 April 1945 one bridge over the Werra River was captured intact. The division crossed on this bridge, Combat Command 'B' leading, followed without distance by Combat Command 'A.' Vehicles were crossed without distance as enemy air was not active and speed was necessary. The flow of traffic over the bridge was never halted.

"CC 'A' was ordered to close in on the city from the north and northwest, CC 'B' ordered to close on the city from the south and southwest. A hasty reconnaissance was made by combat commanders and their task force commanders. Each of the combat commands had three task forces. Under CC 'A' were Task Forces 15, 68 and 9; under CC 'B' were Task Forces 50, 69 and 44. The tables below show the composition of these Task Forces.

"CC 'B' assembled near Heyerode, CC 'A' southwest of Eigenrieden. (See Sketch) Both commands started the encirclement of Mühlhausen simultaneously.

"Opposition was light. Small forces of enemy infantry were cleared up from the small towns adjacent to Mühlhausen. Antitank fire was encountered by TF 15 in Bickenriede and in Dachrieden and was quickly overcome. TF 15 and TF 69 both bypassed Mühlhausen as if to continue east, then TF 15 turned south, then west, and blocked all eastern exits of the city. Meanwhile TF 69 drove past the city and blocked from the north and east. By dusk all task forces were in position as shown on sketch, and held Mühlhausen in a vise-like grip. The division commander decided that the attack to clear the city would be launched at 0700, 5 April 1945. All artillery was emplaced so as to give support if heavy resistance was encountered. All task forces held in place except TF 9 and TF 50, which drove into the city. Sporadic street fighting was encountered. Some three or four hundred prisoners were taken in the town, whereas some twelve hundred were gathered in by TF 15 as they tried to flee eastward.

CC "A"

TF 15	*TF 68*	*TF 9*
15 Tk Bn (-1 Med Co)	68 Tk Bn (-1 Med Co & 1 Lt. Co.)	9 Armd Inf Bn (-1 Co)
Armd Inf Co	Armd Inf Co	Med Tk Co
TD Plat	TD Plat	TD Plat
Armd Engr Plat	Armd Engr Plat	Armd Engr Plat
212 Armd FA Bn		274 Armd FA Bn

CC "B"

TF 50	*TF 69*	*TF 44*
50th Armd Inf Bn (-1 Co)	69th Tk Bn (-1 Med Co)	44th Armd Inf Bn (-1 Co)
Med Tk Co	Armd Inf Co	Med Tk Co
TD Plat	TD Plat	TD Plat
Armd Engr Plat	Armd Engr Plat	Armd Engr Plat
231 Armd FA Bn	128 Armd FA Bn	

"The city was cleared by 0930, 5 April 1945, with a minimum of losses. The enemy troops were well equipped and had excellent morale. It was learned upon questioning the German officers that the rapid encirclement had completely disrupted their plan of defense; thus the quick capitulation of the entire garrison."

Amphibious Reconnaissance

*by First Lieutenant Robert R. Nelson, Jr.**

Information gained by a patrol—even though the mission cannot be completed—is many times of great importance to its own as well as to other units.

FINAL preparations had been made by XX Corps to cross the Rhine River in the vicinity of Mainz on the night of March 27-28, 1945. The XX Corps had been assigned a sector of the Rhine from Eltville to the confluence of the Rhine and Main Rivers.

The initial crossing of the Rhine by Third Army troops had been made on the night of March 22-23, in the vicinity of Oppeheim by XII Corps. On March 25, the VIII Corps crossed the Rhine at Boppard and then on March 26, the same Corps crossed again at Oberwesel.

Because of these crossings, as well as the crossings that had been made at Remagen by the First U.S. Army and at Wesel by the 21st Army Group, the Rhine River no longer possessed any strategic importance to the Germans.

Nevertheless, to the infantrymen of the XX Corps, who were to cross in the vicinity of Mainz, the river still constituted a formidable tactical barrier. Where the crossing was to be made, the Rhine reaches one of its widest points, with a water gap of nearly 2,000 feet. The current in this sector averages 2.39 miles per hour and attains a speed of 5.80 miles per hour at highest navigable levels. Cover on the German side of the Rhine was fairly good, so the chief obstacle was the river's width.

Intelligence reports indicated that one regular German divisional unit (about 7,000 troops) was located immediately to the front of the Corps.

Although the VIII and XII Corps had already established bridgeheads across the Rhine on both flanks of the XX Corps, an additional crossing was necessary to gain possession of the Mainz-Wiesbaden-Frankfurt roadnet. The Third U.S. Army at the time enjoyed a considerable numerical superiority over the enemy, and it could thus continue its rapid advance beyond the Rhine.

The 80th Infantry Division, with the 16th Cavalry Reconnaissance Group attached was ordered to make the Rhine crossing. The Division planned to send the 317th Infantry across the Rhine at Mainz, passing just south of St. Peter's Island. The main assault forces were to land at the northwest outskirts of Kastel.

On March 26, 1945, each reconnaissance troop of the 16th Cavalry Reconnaissance Squadron, Mechanized, was ordered to send one patrol across the Rhine that night on the following missions, for the 80th Division.

1. Send patrol across the river for bridge crossing information. Patrols to return at 0300, March 27.
2. Essential elements of the information desired:
   a. Can patrols cross the river and land undetected.
   b. Is there enemy within a 500-yard semicircle of the patrol's landing site.
   c. What is the location or direction of movement, strength, disposition, and composition of enemy encountered.

Plans of the patrol called for the use of a reconnaissance platoon's regular rubber boat, which will hold three men and a little additional equipment. It was decided that each of the three men would carry a pistol and a submachine gun. One SCR Radio, netted with troop headquarters, was also taken along.

Because little time was available, the patrol moved into the 3d Platoon's OP on the river for a hurried view of the opposite shore. The OP was in a three-story railroad bridge tower, the height of which gave the patrol good observation of the opposite shore, the town of Biebrich, and the two islands in Troop C's zone.

The writer, who led this three-man patrol from Troop C, decided to let the rubber boat drift downstream be-

*Cavalry School Student.

tween the two islands and land in a wooded area at the west end of the town. No enemy activity had been observed on St. Peter's Island, but foxholes were visible. Rettberg Island, however, was alive with enemy activity.

The patrol planned to leave from a point about 50 yards up the river from the railroad tower OP, on the right flank of Troop C's zone. A church overlooking the river from the center of Biebrich was selected as the patrol's objective. The patrol was to move around through the town, stop at the church, and then move back to the rubber boat in the woods.

Arrangements were made with Troop A for the patrol to land in the 2d Platoon's area at Budenheim upon the patrol's return at about 0300 hours on the morning of March 27, 1945.

Much enemy activity was observed on the German side of the Rhine, and it was assumed that if a landing was successful it would soon become too hot for the patrol to stay. Machine-gun nests were spotted along the banks at 50-yard intervals, and many enemy were seen moving about. Because of American crossings on both flanks in the XX Corps Zone, artillery fire could not be requested. However, the 1st and 3d Platoons of Troop C were in position to support the patrol with .30 and .50 caliber machine guns, 37s, and 60 and 81mm mortars.

Members of the patrol wore wool knit caps and sweaters and each man carried an extra magazine of SMG ammunition, which was taped to the magazine loaded in the gun, and also two extra pistol clips. In addition each soldier had three hand grenades, hung from belts—one each of fragmentation, white phosphorus, and concussion types. After study of the ground, maps, and aerial photos in which dangerous localities were noted and orientation check points selected, the patrol checked equipment and made final preparations for the departure.

At 2000 hours the patrol was ready to "jump-off." After waiting an hour for darkness and seeing that a bright moon was rising, it was decided to make the crossing early before the moon rose too high. The patrol wanted also to take advantage of the evening mist which was settling over the river and masking some of the moon's brightness.

The patrol pushed off at 2100 hours. Each patrol member had a boat paddle which was used for slowing speed and steering. Paddling was too noisy.

Reconnaissance boats are oval in shape and flat-bottomed, which make them difficult to handle because of their spinning. The patrol made its way to a point between the two islands where it stopped and listened. The current was less strong here. Activity was heard in Biebrich and also in the wooded area west of the town, which had been chosen as the original landing point. A new landing point directly in front of the patrol's present position between the two islands was selected, where all was quiet.

When the patrol was within 20 feet of the new landing site it spotted a sentry walking on the road just above the river bank. This changed plans, and the boat was allowed to drift downstream.

When the patrol reached a point opposite to the church in Biebrich, two or three boats anchored off shore were found. It was decided to drift in to the three boats, tie up the patrol's boat to the German boats, and swim ashore. But, when the patrol was within an arm's reach of the newly discovered boats a German sentry appeared and called out to the patrol. The patrol froze into position and let its boat continue to drift downstream. The German sentry failed to take any action.

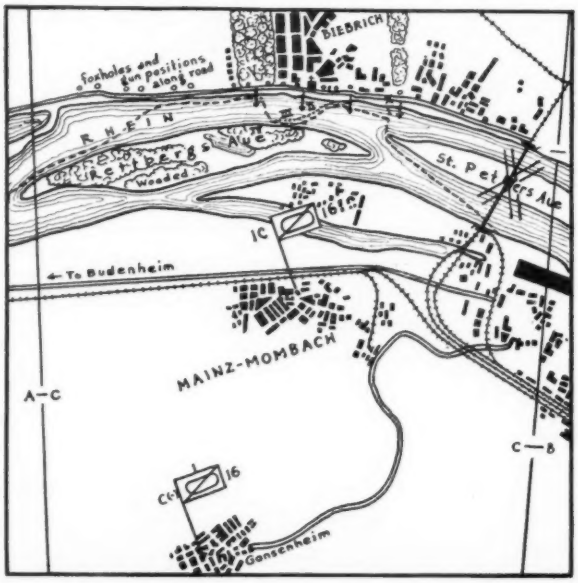
Just after this a German boat was observed being paddled down the river. It came to within 30 feet of the patrol's boat but the river mist was heavy at the time and the Germans failed to see the patrol.

It apparently was impossible to land on the German side of the river, and so the patrol returned, landing on its own shore at 0030, March 27, 1945.

The patrol in three hours and 30 minutes had located several machine-gun positions, enemy positions on the two islands, and enemy positions on the German side of the Rhine.

One difficulty the patrol experienced was due to its lack of experience with rubber reconnaissance boats. It therefore had trouble maintaining a straight course and keeping the boat from spinning. The boat itself is clumsy and hard to paddle, and it rides so low in the water under a load that it ships water. However, the boat is easy to inflate and deflate and is light though cumbersome.

Although the patrol did not make a landing, the information it obtained proved to be of great value to the 16th Cavalry Reconnaissance Squadron and the 80th Division, when they crossed the Rhine the following night.



Armored School Extension Courses

*by 1st Lieutenant Olin C. Harrison**

ARMY extension courses are slated to play an important part in the postwar education of reserve officers. The Armored School at Fort Knox, Kentucky, has announced that it is already accepting applications for enrollment in its courses.

These courses are of particular interest to reserve officers in the Armored and Cavalry branches, since satisfactory completion of a prescribed series of extension sub-courses will be a requisite for their promotion.

Carefully selected officers at The Armored School are being assigned to write, edit and grade the various extension courses. These courses will cover everything from basic military instruction in the 10-series course, to combat command operations and staff functions in the 50-series course.

The courses will be available to all ranks up to and including majors. However, only the first five of the 50-series course, for majors, will be administered by The Armored School. All sub-courses after the first five are the responsibility of the Command and Staff College at Fort Leavenworth, Kansas.

Established by army regulations, the Extension Course Department of The Armored School has been in operation since July 30, 1946. The department is composed of four divisions: an editorial division, which works with other School departments in preparing subcourses; an operations division, which processes applications and disseminates sub-courses to students; an instructor division, which grades students' solutions; and an administrative division, which maintains the necessary records.

The regular instructional departments of the School —Tactics, Weapons, Automotive, Communications, and General Instruction—do the actual compiling and writing of the courses.

Every officer who works on extension courses at The Armored School must have combat experience. The School commandant and all department directors concerned exercise close supervision over all courses.

Following is a typical case in the preparation of a 30-series subject: Tactics of the Tank Company.

The Director of the Tactics Department first selects an officer to write the course who commanded a tank company in combat for several months and later was a battalion S-3 in action.

First, the officer selected studies all the field manuals, technical manuals, and other publications relating to his subject. Then he prepares a detailed outline of the entire sub-course, including the scope of each lesson and the tactical principles involved. This outline is presented at a conference attended by his division chief and department director. By the end of the conference the outline is thoroughly formulated and ready for expansion into a sub-course.

The officer then writes the course, including the lesson being considered in this article. He stresses practical work based on the text assignments available, putting hypothetical situations and requiring students to work out the solutions to those problems. He will probably include an overprinted map to be used by the student in working out the solutions.

ARMY EXTENSION COURSES

APPLICATION FOR ENROLLMENT

(To be submitted in triplicate)

LAST NAME—FIRST NAME—MIDDLE INITIAL	ARMY SERIAL NO.
Jenks, Joe H.	01 030 257
CITY, TOWN, OR POST OFFICE	STATE
Wichita Falls	Texas
NUMBER AND STREET OR RURAL ROUTE	
3376 Seymour Road	
TELEPHONE NO.	DATE
3-9247	15 October 1946

SUBJECT: Application for Enrollment in Army Extension Courses

TO: Organized Reserve Headquarters
Room 1122, T. & P. Bldg.
Fort Worth 2, Texas

1. REQUEST IS MADE FOR ENROLLMENT IN THE FOLLOWING ARMY EXTENSION COURSE

ARM OR SERVICE	SERIES SUBCOURSES	2. DATE OF BIRTH
Armored	30	12 February 1920

3. MY PREVIOUS MILITARY EDUCATION HAS BEEN AS FOLLOWS (Basic military training and experience in chronological order. Use additional sheets for statements if space provided is insufficient.)

1937-1939--ROTC, Texas A. & M. College, College Station, Texas.
1 Feb 41--Inducted Selective Service.
15 Feb-15 Jun 41--Basic training, CATC, Ft Riley, Kans.
15 Jun-1 Dec 41--Cadre trainor, CATC, Ft Riley, Kans.
21 Aug 41--Promoted to corporal.
19 Nov 41--Promoted to sergeant.
2 Dec 41-20 Mar 42--Communication sergeant, Tr E, 6th Cav, Cp Blanding, Fla.
27 Mar-18 Jul 42--OCS, The Cavalry School, Ft Riley, Kans.
1 Aug 42-2 Jan 43--Platoon leader, 113th Cav, Cp Bowie, Texas.
3 Jan-10 Jul 43--SD, Desert Training Center, Cp Young, Calif.
2 Aug 43-9 Mar 44--Ex O, 79th Rcn Tr, Camp Phillips, Kans.
10 Mar-16 May 44--En route overseas as replacement officer.
17 May-9 Sep 44--Platoon leader, Co B, 15th Tk Bn, 6th Armd Div.
10 Sep 44-3 Oct 45--Motor officer, Co B, 15th Tk Bn, 6th Armd Div.
15 Oct 44--Promoted to first lieutenant.
4 Oct 45-12 Jan 46--Redeployed, terminal leave, and separation.
12 Jan 46--Accepted ORC commission as 1st Lieutenant, Armored Reserve.

4. IF A CIVILIAN, WARRANT OFFICER, OR ENLISTED MAN, INDICATE IN THE SPACE BELOW YOUR EDUCATIONAL QUALIFICATION. (E.g., Jr. Hi., or 10 year high school, high school graduate, Jr. Col., or 14 year college, college graduate.)

SIGNATURE: Joe H. Jenks

GRADE	BRANCH	ORGANIZATION	COMPONENT (R.A., Res., NG, ORC, CAP)
1st Lt.	Armored Reserve		ORC

WD AGO FORM 145 PREVIOUS EDITIONS ARE OBSOLETE

*Armored School Extension Course Editor.

The next step in the preparation of the lesson is to test it out. The officer, who is preparing the course, arranges for several lieutenants from other departments to be detailed to him for this phase, and the lesson is submitted to them. The lieutenants endeavor to solve the lesson and their solutions are carefully studied. If several miss a requirement, the author of the course assumes that the requirement is either too difficult or else it is not clearly presented to the student.

The necessary changes are made and the lesson is then ready for presentation to a board of officers who will make the final decision. This board (sometimes called the "Murder Board") takes the lesson apart word by word. The board may approve the lesson with or without changes, or direct that it be rewritten.

An editing officer is available to the author of each course for consultation at any time on questions of format and syntax. Then the course is written up in its final form and turned over to an editing officer for a final check.

The lesson is then forwarded to Headquarters Army Ground Forces for final approval. When AGF gives its final O.K. it is ready for distribution tc students.

To enroll for extension courses the student is required to fill out WD AGO Form 145, which can be secured from the local Reserve Headquarters.

When the enrollment blank has been submitted and approved, the student receives the first lesson of the sub-course he is enrolled for. The lesson material includes a lesson assignment sheet, which gives the text assignments; materials required, and any other information necessary to prepare the student for solving the lesson requirements. It also includes an answer sheet, which gives the requirements and provides space for the student to write his answers.

When the solution sheets are returned, they are given to an officer who grades them. His job is relatively easy if the requirements are true-false, multiple-choice, or word-completion type. A map problem, or a requirement which necessitates a detailed explanation, is a different matter.

The grading officer does not guess how much to cut if an answer is either wholly or partly wrong. At the time the lesson is prepared, a cut sheet is also made which tells the grading officer just how many points to deduct for each error or omission.

When the lesson is returned to the student a comment sheet is attached. For example, let us assume that the student made an error in the route of advance to an objective. The comment sheet would state that the route of advance was too long, or too exposed, or whatever else was wrong. The solution would show the route which should have been chosen.

The school solutions are not considered to be ironclad. The grading officer has instructions to consider all solutions carefully. If the student hits on a satisfactory solution, or if he follows sound reasoning and proves it by his answer, the student will receive partial credit regardless of the school solution. If the school solution is deemed to be the best of the several possible answers, the solution sheet will include a discussion of the problem, with reasons why the school solution is considered the best. Furthermore, each item of the school solution includes a text reference supporting the answer given.

The extension courses offered by The Armored School are:

The 10-series of sub-courses designed for warrant officers, enlisted men, and qualified civilians. It includes sub-courses pertaining to general military instruction on such subjects as organization of the armed forces, drill and physical training, interior guard duty, first aid, military law, individual weapons, and basic administration.

The 20-series is designed for second lieutenants, and includes such subjects as methods of instruction, tank gunnery, mines and booby traps, mess management, and tank platoon in combat.

The 30-series, for first lieutenants, includes tank company combat supply, tank company in combat, armored infantry company in combat, troop movement and bivouac, terrain evaluation, and training management.

The 40-series, for captains, teaches such subjects as military government, tank battalion in combat, staff functions in the tank battalion, armored infantry battalion in combat, the armored engineer battalion, and the mechanized cavalry reconnaissance squadron.

The 50-series, for majors, is administered only in part by The Armored School, all sub-courses after the first five being the responsibility of the Command and Staff College. The sub-courses administered by The Armored School cover combat command operations, staff functions, and armored amphibious operations.

EXTENSION COURSE OF THE ARMORED SCHOOL

LESSON ASSIGNMENT SHEET

SUBCOURSE 30-2 ..... Training management

LESSON 3 ..... Preparation of applicatory tactical exercises

CREDIT 2

TEXT ASSIGNMENT ..... FM 21-5, pars 104-121.
FM 17-30, pars 31-37, appendix I

MATERIALS REQUIRED ..... Sketch map, training area X.

LESSON OBJECTIVE ..... This lesson is designed to illustrate principles involved in developing a tactical exercise.

SUGGESTIONS

Study FM 17-30, pars 31-37, for principles of the attack. Use the attached sketch map for your terrain study.

EXERCISES

1. **Situation.** a. This lesson is a continuation of the situation in Lessons 1 and 2.

b. Your company entered the unit training phase today, 5 July. You have just received a training memorandum from battalion headquarters, directing you to prepare a tactical exercise on the tank platoon operating with an infantry company in the attack, illustrating the following principles:

(1) Battle reconnaissance.
(2) Initial orders and dispositions.
(3) Fire and maneuver.
(4) Assault of the position including reorganization.

The exercise is to be conducted in Training Area "X" (see sketch map).

2. **FIRST REQUIREMENT.** See answer sheet.

3. **SECOND REQUIREMENT.** See answer sheet.

Editorial Comment

Christmas Greeting from General Devers

To All Members of the Army Ground Forces:

On the eve of this Christmas season I extend my sincere and hearty greetings to you all.

We regard the New Year with cheer and confidence; dedicating ourselves to the high resolve of preserving our priceless liberty, that "Peace on Earth; Good Will to Men" may become a reality for all time.

JACOB L. DEVERS,
General, USA,
Commanding.

New Ground General School

THE Cavalry School, as a name, passed into history on October 31. In keeping with the announced War Department plans the Army school at Fort Riley becomes The Ground General School Center, teaching several different courses. The new school center will receive its initial impetus from the assets passed on to it by The Cavalry School. These assets are: a complete instructional plant, a going concern of proven efficiency, the spirit and cooperation that made an outstanding record possible. The success of the new school is assured for it begins operations with all of the "know how" The Cavalry School has assembled over the years.

The first beginnings of The Cavalry School, The Cavalry and Light Artillery School, was established in 1887. This was replaced in 1907 by the Mounted Service School. The Cavalry School, as it is known today, succeeded the combined school on September 19, 1919. Many of our Nation's great soldiers have either studied or taught at this famous school. To mention a few: Pershing, MacArthur, Wood, Lear, Patton, Wainwright and Craig.

The old school has performed its mission well. In World War II, five and six-tenths per cent of all General officers had Cavalry backgrounds. This fact is remarkable for of the total officer corps of the United States Army, only one and two-tenths per cent were Cavalry officers.

The Armored Cavalry subjects taught by The Cavalry School will be transferred to Fort Knox, Kentucky, where they will be incorporated into the Armored School. This is in line with the announcement revealed at the Dedication of Patton Hall at Fort Riley on April 4, this year, by Secretary of War Robert P. Patterson, that the historic Cavalry and the comparatively new Armored Force will be merged into a single arm to be known as the "Armored-Cavalry" in recognition of the new developments during World War II.

It is the desire of the War Department to keep alive the art of horsemanship. Gen. Jacob L. Devers, in the press conference held at Fort Riley last April, declared, "Certainly the horse won't be what it was before the war. It will be used as a training instrument for officers. I feel that we have to train officers along those lines—if for no other reason than to keep our hand in. Pack transportation has demonstrated its necessity many times. If we are going on missions where we may not be able to choose the terrain, the art of horsemanship may be extremely important again. This was proven in the late war."

To implement this policy, the new Ground General School will maintain a Department of Horsemanship. This department will continue to teach a very small number of selected officers advanced and intermediate horsemanship and packing. These courses will give the Army a small core of trained horsemen that may in some future time be the key to a critical situation in difficult terrain. In addition to the horsemanship courses there will be taught two enlisted courses—one, the Horseshoers Pack and the other, the Saddlers Pack; thus keeping for the Army two highly skilled arts on which animal transport is vitally dependent.

The new Ground General School will be charged with the task of training, each year, the entire graduating class of West Point. The graduates will be trained in the specific duties from a lieutenant in the Army to a battalion commander. This will be in addition to their general education at the U.S.M.A. and their indoctrination with the traditional officer philosophy of "Duty, Honor, and Country."

In addition to the Military Academy graduates, Reserve and National Guard Officers and graduates of the Army Officer Candidate Course, who have been integrated into the Regular Army, will be assembled at Fort Riley for further instruction and indoctrination before being assigned to duty. These functions of the new school are known as the "Basic Course."

The Army Officer Candidate Course, presently located at Fort Benning, will be transferred to the Ground General School which will qualify or reject all of the officer candidates for the entire Army. The course will be branch immaterial; the candidates who successfully complete the course will receive their basic branch training at their respective schools. It is planned to graduate two classes a year.

The present Intelligence School will become the Intelligence Department of the Ground General School and will be considerably enlarged. There is no contemplated change in the courses as presently taught by the Intelligence School, which are: Officers' Intelligence Course, for the officer students; the Photo Interpreters and the Order of Battle-Interrogators Courses which are for enlisted specialists. The department will be charged with the instruction of all Intelligence Subjects taught by the Ground General School.

After World War I Cavalry was a relatively obscure arm and received little public notice. Because American Cavalry failed to participate as Cavalry to any extent in World War I, the public paid little heed to the magnificent accomplishments of the Cavalry of the other Allies as well as that of our enemy, Germany. American Cavalry after World War I was led by an aggressive group of leaders with vision and foresight. They incorporated into the Cavalry weapons which tended to greatly increase the fire power of the arm and also incorporated motor vehicles to increase the mobility of the arm. Gradually the Cavalry developed an entirely mechanized force which was the forerunner of our Armored Force. It was composed of lightly armored vehicles which were fast and had great cross-country mobility and by the gradual incorporation of other arms, such as Field Artillery and Engineers, produced a balanced mechanized striking force whose missions were the same as those performed by horse cavalry throughout the history of warfare; but the technique of performance of these missions was greatly changed due to the cavalry trooper being carried in a fast armored vehicle instead of on a horse.

It was the vision and foresight of the Cavalry which gave the U. S. Army the basis for the magnificent armored units, which did so much in World War II to accomplish the defeat of the Axis powers. Much of the tactics and technique of the Armored Force stemmed from the basic and advanced indoctrinations given the leaders of these armored units when they received instruction at The Cavalry School.

The transfer of activities of The Cavalry School to Fort Knox is not an act indicative of the abolition of the Cavalry function, but merely a transition and a combination entirely in line with the policy of the U. S. Army to encourage and accept changes which will keep our Army the most modern and effective for peace in the world.

Cavalry Day Dedications

FOUR cavalrymen, three of whom won the Congressional Medal of Honor and one the Distinguished Service Cross with a Cluster, for conspicuous bravery in World War II, were remembered on October 30, Cavalry Day, at Fort Riley, Kansas, when each had a Cavalry School barracks dedicated in his memory.

The barracks were named: Praeger Hall, in memory of Major Ralph B. Praeger of Claflin, Kansas; Waybur Hall, in memory of First Lieutenant David C. Waybur of Piedmont, California; McGill Hall in honor of Sergeant Troy A. McGill of Ada, Oklahoma, and Thorne Hall in memory of Corporal Horace M. Thorne of Desoto, Missouri.

Cavalry Day, selected as the anniversary of the organization of cavalry in the Continental Army on October 30, 1776, was decided upon as the most fitting time to make the dedication to these four cavalry heroes.

Major Praeger was awarded the DSC with an Oak Leaf Cluster for his command and distinguished service as a Guerrilla leader in the Philippines after the fall of Corregidor. When the Japs invaded the Philippines he was in command of Troop C, 26th Cavalry, Philippine Scouts.

Lieutenant Waybur on July 17, 1943, volunteered to lead a patrol into enemy territory in Sicily to locate an isolated Ranger unit. When trapped by four light Italian tanks he ordered his patrol, armed with one .30 caliber and two .50 caliber machine guns, to engage the enemy. With ammunition exhausted, three of his men wounded, and himself seriously hit, Lieutenant Waybur stood with his .45 caliber Thompson submachine gun in bright moonlight directly in line of the leading tank's fire and succeeded in killing the two enemy crew members with point-blank fire at 40 yards.

Sergeant McGill was awarded the Medal of Honor for heroism in action on Los Negros Island in the Admiralties, for singlehandedly standing off an attack by drink-crazed Japs on a critical key position.

Corporal Thorne won his Medal of Honor for valor during the German counterattack late in 1944. He neutralized an enemy tank by killing the occupants and forcing the supporting machine guns and bazooka team to withdraw in confusion.

* * *

Annual Meeting

The annual meeting of the United States Armored Cavalry Association will be held at the Army and Navy Club, Washington, D. C., at 8 P.M., Monday, January 27, 1947.

This meeting is held for the purpose of electing officers and for the transaction of such other business as may properly come before the meeting.

Armored Division Association

2d Armored Division Association

FORMATION of the Second Armored Division Association has been announced by Captain George M. Warren, Acting G-1 of the Division, who is handling the drive for members. The Association, which will function as a social, informative and historical agency, will have its temporary home at Camp Hood, Texas.

At the present time, pending the adoption of a constitution and by-laws, a promotion committee, whose duties are to handle everything pertaining to the Association, has been appointed.

Major General Isaac D. White, Commandant of The Cavalry School, called a meeting at Fort Riley, Kansas, for all former members of the Second Armored Division and sent to the committee the various ideas of this group as pertains to the formation of the Association.

Colonel Reddin F. Perry, a former Chief of Staff of the Division, held a similar meeting of "Hell on Wheelers" at Fort Knox, Kentucky. This group also forwarded plans and suggestions to the committee.

Names and addresses of the committee are: Lt. Col. Louis W. Correll, Hqs. 2d Armored Division; Lt. Col. Marcel F. J. Brunow, Historical Division, War Department; Major Louis M. Nawrocky, Sixth Tank Bn.; Capt. George M. Warren, Hqs. 2d Armored Division; and 1st Lt. William W. Barnett, Jr., 78th Armored Field Artillery Bn.

Mr. W. M. Kabler, former adjutant of the 17th Engineer Battalion and now a lawyer in civilian life, has been contacted and has consented to draw up a constitution and by-laws to be submitted to the promotion committee for approval.

The officers of the Association will be civilians, with their headquarters tentatively at Camp Hood, Texas. Membership will be open to anyone who has served in the Division, either overseas or in the United States.

Captain Warren is anxious to contact all former members of the Division so as to bring the address file up to date. "We do not have the present addresses of a large number of men who served overseas with the Division," Warren stated, "and the only way to insure these men of getting information on the progress of the Association and a copy of the Division History is by contacting us."

All copies of the Division History will be mailed direct from the publisher.

5th Armored Division Association

On September 11, 1946, the Fifth Armored Division Association was formally activated with appropriate ceremony in Washington, D. C. Major General Lunsford E. Oliver, wartime Division Commander, presided and the affair was attended by a dozen former members of the Division, as well as by General Devers and General Haislip. The date of September 11th was set since this commemorated the first entry of Division troops into Germany in 1944.

At the initial meeting General Oliver was elected President of the Association and Lieutenant Colonel Ressegieu appointed Acting Secretary. Former members of the Division are urged to supply home addresses and information about themselves to the following address:

Lt. Colonel F. E. Ressegieu
Research & Development Division, WDGS
The Pentagon, Washington 25, D. C.

At present the main function of the Association is to compile a roster of home addresses of as many former members of the Division as possible. At sometime in the future it is hoped to hold a meeting of representatives from different geographical areas, at which time a more permanent and elaborate organization can be created.

General Oliver recently received word that Combat Command R of the Division had been cited by the French Republic for its operations from the 14th to the 20th of September 1944 in the Wallendorf Area, Germany.

General Oliver also recently received a letter from Prince Felix of Luxembourg, who was escorted into his home city by the Fifth Armored Division. Prince Felix expressed considerable interest in the activation of the Division Association and expressed a desire to become an honorary member.

* * *

9th Armored Division Association

ACTING SECRETARY, Captain Louis Gelling, of the Ninth Armored Division Association requests that former company and battalion commanders of units in the division contact him. He is particularly anxious to obtain all available rosters of former division units. All correspondence should be addressed to Captain Gelling at: Headquarters The Armored School, Fort Knox, Kentucky.

Former members of the Ninth Armored Division should also contact Captain Gelling if they are interested in joining the association.

11th Armored Division Association

THE Eleventh Armored Division Association will hold its first National Convention next summer in Chicago. The date of the meeting has been set for August 14, 15 and 16 so that members will reunite on the fifth Anniversary of the activation of the Division in Camp Polk, La. William Lipp, former Division QM, is making an extensive search in Chicago to find the hotel best equipped to handle the Convention.

Interest in the Association is growing throughout the country, according to letters now reaching the National headquarters at 1719 K Street, N.W., Washington 6, D. C. Many of our members have expressed a keen interest and willingness to organize local chapters of the Association in towns where Division membership is strong.

Charles D. Starrett, 490 AFA Bn. of Euclid, Ohio, has offered to help form a chapter in his area. We know we can count on Bernard Schwarts of New York City and Isaac Kramer of the MPs is lining up Thunderbolt men in Boston. John Janecek of Lincoln, Neb., sent up a list of all Band members and he states that members of the Division Band are keeping in close touch with each other. In a roundup of Thunderbolt men in the town of Irwin, Pa., 12 men's names were found, who served with the Eleventh.

From such groups as these, the Association is seeking to accomplish the purpose set forth in the Constitution drawn up in Gmunden, Austria, just before the Division was disbanded. This Constitution states that the Association was formed to "foster fellowship and good will amongst members of the Division . . . to provide mutual aid and assistance and to promote the general welfare of its members."

Details of how this can be accomplished will be discussed at business meetings to be held next summer. At the same time, the agenda will include the election of officers and the submission of a permanent constitution and by-laws for the Association.

In the meantime, news of the Division will continue to appear in this column. Here are some of the latest news items:

Albert H. Buschmann, Div. HQ. of New York, just became the father of a baby girl. Don Casanova, of the Band, is singing his "Rum and Coca-Colas" in New York. He has plans that may take him on tour as far as Puerto Rico. Major Michael J. L. Greene, 41 Cav. Rcn. Sq., writes from Germany that he has met the following 11th A.D. officers, all in the U. S. Constabulary, now policing Germany—Col. Charles H. Reed, Capt. Harold Mullins, Lt. Col. Joe Ahee, Major Ralph Gray, Col. Leo B. Conner, Lt. Col. Ernest Brooch and Lt. Col. Palmer McGrew. He also saw Major Hill Blaloch and Lt. Col. George Pickett of the 1st Inf. Div.

Lt. Col. Joy R. Bogue, who G-2'd the 11th through Louisiana maneuvers, and was also Chief of Staff of amphibious operations in the Pacific, is now instructing in the Intelligence Course at Command and Staff College.

Roy Stringfellow and John Whitaker of the Division Infantry and Robert F. Jenkins of the Division Signal Company are now working in Shreveport, La.

Mrs. Elizabeth McWilliams of Darlington, Wisconsin, has asked to be put in touch with any of the buddies of her son, Kenneth P. McWilliams, who was killed in the Ardennes campaign.

The rapid growth of the Association has been especially marked during the last month. Yet membership from some of the units of the Division is noticeably lacking. This is due largely to the inability of the Association to obtain rosters of their veterans. Information is being sought especially of the names and whereabouts of former members of the 492 AFA Bn. and all companies except "A" of the 133d Ord. Maintenance Bn. We would like to have rosters of both.

We want to thank those of you who sent in your names in response to our request in the newspapers. We received over one hundred and fifty replies and we wish we could thank all of you by name in this column, but space does not permit it.

* * *

12th Armored Division Association

PROOFS of the 12th Armored Division Combat History, priced at $5.00, are expected off the presses in the near future. The book can be ordered from: 12th Armored Division Association, P.O. Box 950, Baton Rouge, Louisiana.

Temporary address of all communications pertaining to the Division Association is: J. Edward Obey, 419 West 38th Street, New York 18, New York.

Pat Harness, formerly of the 56th AI Battalion, is publishing a monthly edition of the *Hellcat News*, subscription to which is $1.00 a year. Subscriptions can be sent to Mr. Harness at: 2737 South Veitch Street, Arlington, Virginia.

The Executive Council of the Association made tentative plans at a meeting in June at Harrisburg, Pennsylvania, to hold the first convention of the Association somewhere in the East in September, 1947, which will be the fifth anniversary date of the activation of the division.

Those men who joined the Association in Heidenheim, Germany, have a valid membership until the end of 1946. Those who joined overseas and who have also purchased a membership recently are members in good standing until December 31, 1947. Those who have not renewed their membership are urged to send $1.00 to the Association at: P.O. Box 950, Baton Rouge, Louisiana.

14th Armored Division Association

FORMER members of the 14th Armored (Liberator) Division are requested to write Lieutenant Colonel J. C. Lambert, Adjutant General's School, Fort Oglethorpe, Georgia, for information about the formation of a 14th Armored Division Association.

Innumerable inquiries concerning such an organization have been received, according to Colonel Lambert. The organization has the backing of both Brigadier General Albert C. Smith, ex-major general and wartime division commander, and General Jacob L. Devers, former Sixth Army Group commander and present commander of the Army Ground Forces.

The association, according to Colonel Lambert, will be a nonprofit one and will not pledge support to any political party, religious group, or other organization of veterans. Its purpose will be to foster and preserve the comradeship and *esprit* that existed among its members during the training and combat life of the division.

The 14th Armored Division trained at Camp Chaffee, Arkansas, and Camp Campbell, Kentucky. It is credited with liberating 200,000 allied prisoners of war and 250,000 displaced persons. More than 500 of its members were killed in action and 3,000 wounded. The division was inactivated at Camp Patrick Henry, Virginia, during September, 1945.

* * *

Letters to the Editor

VETERANS' ASSOCIATION 6TH U. S. CAVALRY

Detroit 13, Michigan
October 31, 1946.

Colonel Edwin M. Sumner, Editor,

ARMORED CAVALRY JOURNAL,
1719 K Street, N. W.,
Washington 6, D. C.

Dear Sir:

Received your letter of October 25th.**

***Regarding the Veterans' Association 6th U.S. Cavalry, early in September 1946 a letter was received from Colonel T. J. Marnane in reference to the policy of the Commanding General, Fifth Army, to assist us in forming a 6th Cavalry Division Association. Needless to say, we appreciate his attitude and offer of assistance very much and we may make use of his offer.

One correction on his letter, however—we are not, and do not intend to become a division organization as that would be a misnomer. The 6th Cavalry was a regiment until January 1, 1944, at which time it was reorganized on the Group setup, therefore we will maintain our present name and title of the 6th U. S. Cavalry Veterans' Association.

One matter the ARMORED CAVALRY JOURNAL may be able to help us on, is the absorption of the 6th Cavalry Group Association, which was organized shortly after the termination of the war. It is the opinion of our Commandant that, that organization was set up because the fellows did not realize that the Veterans' Association—6th U. S. Cavalry was in existence, and had been for many years.

At present we are planning a Cavalry Round-up, or reunion for the association in Chattanooga, Tennessee, which we would like to hold early next summer, therefore if the JOURNAL can lend any assistance in the matter it will be appreciated, at least in boosting our membership.

W. R. WAGNER,
Adjutant.

FIFTH UNITED STATES CAVALRY
VETERANS' ASSOCIATION

Newcastle, Pa.

Colonel Edwin M. Sumner, Editor,

ARMORED CAVALRY JOURNAL,
1719 K Street, N. W.,
Washington 6, D. C.

Dear Colonel Sumner:

Your letter of October 29, received and its contents noted with pleasure. You request a short history of our association, but as all the historical records are in the custody of our Historian, Comrade John H. Hackett, in Savannah, Georgia, I am unable to give you any data about the regiment. But, I will try and explain our aims and objectives in a few brief remarks.

First, to inculcate the true principles of patriotism and loyalty to the United States Flag and Constitution, to cherish the true traditions of the regiment in which we had the honor to serve, to show our appreciation of the service of the officers and men who have served in time of peace or war of yesteryear. Our aim is to cultivate the true principles of fraternal comradeship, to maintain open hearts and sympathy to all within our circle and to render aid and comfort to those who are in need of assistance and to promote a feeling of true comradeship to any member of the grand old Fifth U. S. Cavalry, wherever he may be.

This preamble is very prominent at our annual meeting. Every year we who attend meet some of the boys who served in the regiment in Puerto Rico and the Philippines, and it surely brings back memories. I have met any number of comrades whom I had not seen for 44 years at these annual meetings.

Our annual meetings in the past have been well attended. Members have come from every state in the union, Cuba, Puerto Rico, and other places too numerous to mention.

I send very best wishes to you and your association, and I am in,

Comradeship,

A. B. HAID,
Commander.

What Would You Do?

*by Colonel Hamilton H. Howze**

SITUATION (See Sketch)

You are commanding a cavalry troop (proposed organization)* of a Corps Cavalry Squadron. Your troop is engaged in a pursuit, and during this day has been delayed by successive small enemy detachments. In your evaluation of the terrain, you estimate that the strongest defensive position along your entire route is the ridge ABC.

Your leading platoon split at the road fork at Y and continued forward. When the leading elements were at K and N, the left column received AT fire from Hill A and lost an armored car which is now burning briskly, as may be seen from the sketch. The remaining elements on the left fell back hastily to L, while the right took cover in the woods at M, where they could see the terrain fairly well, but no sign of enemy.

The head of the troop column is now at Q. An artillery round has just landed 200 yards left of Q. A patrol dispatched by you to P received a near miss from a shell that came in flat and hard and exploded—seeming to come from either Hill B or Hill C.

The Squadron Commander now appears at Q and accompanies you to F where you both agree that Hills E, F, and B are traversable by tanks, but A and C are tank-proof.

The Squadron Commander now says to you, "I have brought a platoon of light tanks along; they are at the tail of your column, and attached to you. You must get past this ridge and proceed along your route with the minimum delay. Your forward observer here can get the fire of all six assault guns. It is now noon. Now tell me what you are going to do."

REQUIREMENT:

Tell him. What is your plan?

***PROPOSED TROOP (Corps Cavalry)**

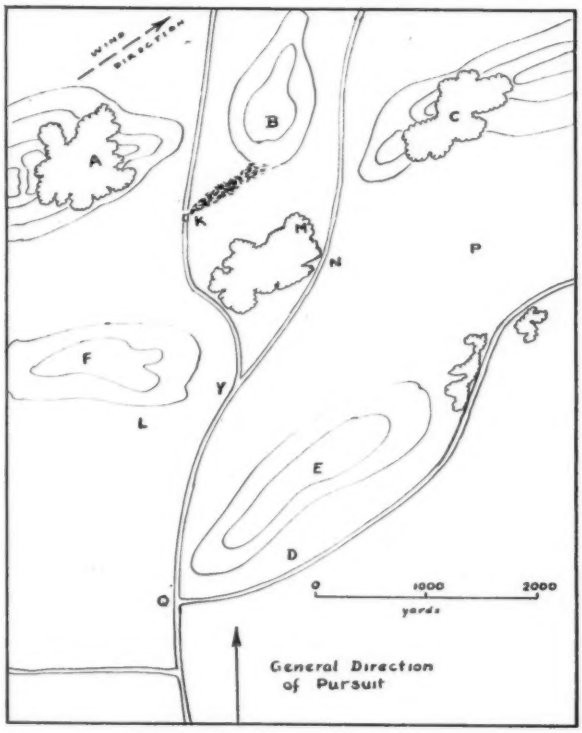
Troop Hq and Three Platoons

PROPOSED PLATOON

Two Scout cars, each of two one-quarter tons and one light tank.

Rifle Section. Two personnel carriers carrying a total of one officer and 21 riflemen besides drivers.

Support Weapon Squad. Two one-quarter tons carrying one 81mm mortar, ammunition and crew.



SOLUTION

My plan as the Troop Commander. (See sketch.)

1. I know now about as much of the enemy situation as I can reasonably expect to get without using up an inordinately great amount of additional time. I know that the enemy intends to defend both passes (on either side of B). Which he holds the strongest, or where his specific positions are, I do not know. I decide then to attack the pass where the terrain will best facilitate attack.

2. The remainder of the troop plus the attached tanks will assemble under cover just short of F, and I assemble the platoon leaders somewhere on F where I can issue them their orders. The leading platoon at this time will remain in its original position.

*Director of Instruction at Cavalry School.

3. I will instruct the forward observer as follows: "Arrange to have your guns register in on concentrations 1, 2, 3, 4, and 5, as I indicate here on your map. Report back to me within one-half hour"—and send him on his job.

4. I will instruct the platoon leaders: "We will attack to gain passage through the pass between A and B. We will not bother to reduce the pass between B and C. This plan will require us to reduce the enemy positions on A and B. The second and third platoons will attack abreast, as indicated, to take the First Objective, supported by fire by the tank platoon on F. After it is taken, the second platoon will remain in position and support the attack on the Second Objective. That attack will be made by the third platoon attacking as indicated from A, while the light tank platoon will attack directly from F to B following the general route shown. On taking the Second Objective, that area will be consolidated by the troops on it and further orders will be issued at that time.

5. "Now as to details. My plan for the progress of the attack I have divided into phases.

"*Phase 1.* Second and third platoons cross line of departure, attack First Objective. Light tanks from F shell entire area of First Objective, with particular attention to suspected enemy positions. Artillery, fire concentrations 1 and 2 for ten minutes, simultaneously; then shift to slow fire on 3 and 4, prepared to return to 1 and 2 on my order.

"*Phase* 2. When attacking troops reach line R-R, tanks will fire on First Objective above and beyond the line S-S, until ordered to stop.

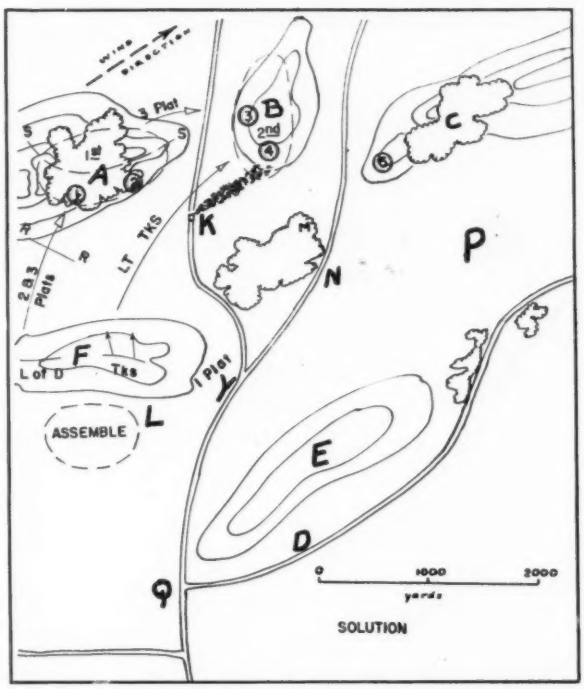
"*Phase* 3. Second platoon on First Objective occupies that position and places fire on Second Objective. It will lift that fire when endangering our own attacking elements or upon my order, whichever occurs sooner. Third platoon from First Objective as indicated, will attack Second Objective in conjunction with light tank platoon. Artillery will fire concentrations 3 and 4 until ordered lifted by me or by the F. O. Tanks will attack from hill at F along route as indicated and in conjunction with third platoon will occupy Second Objective.

"*Phase* 4. Troops on Second Objective will prepare to resist counterattack which, however, I do not expect. Do not dig in but be prepared for further movement in the general direction of pursuit. In this phase, the artillery will fire slow fire on concentration 5 unless called for for more pressing missions. The first platoon, when Second Objective is taken, will form on the road prepared for immediate pursuit to the north.

"Each of the above phases will be ordered by me.

6. "I will accompany the attack of the second and third platoons. The second platoon will be on the right. Platoons will dismount their riflemen prior to crossing the line of departure. Put your quarter-ton crews right with your rifles. Have one light tank follow each rifle squad, attached to it, to be called up to render close fire support as necessary. Put your mortars under cover behind F and register in on the reverse slope of hill A. Let them fire at a slow rate throughout our attack. Be sure you are capable of stopping their fire.

7. "It is now 1300 hours. Your platoons are assembled. Issue your orders carefully. We will attack at 1400 hours."



At the same time that the African wings wheeled inward on the disorganized Roman center, Hastrubbal appeared on the Roman rear flank thus closing off all hope of retreat or escape. Thus, with this third element, Cannae became the perfect battle, a battle of annihilation. The Romans fought with the utmost bravery and acquitted themselves with honor. Their lines grew shorter. They faced outward to meet the attacks of the enemy, but the pincers closed in on them pitilessly and they were crushed. The maniples fought independently and were cut off and destroyed piecemeal. Some groups managed to cut their way out. When the Carthaginians were themselves exhausted with the massacre, they took the remaining 3,000 Romans prisoners.—EDWARD BARKLEY WILCOX, *Cannae, the Perfect Battle.*

OTHER BRANCHES

Major General Robert T. Frederick

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Merry Christmas and a Happy New Year to Other Branches from the ARMORED CAVALRY JOURNAL

"Never before in the history of arms have the requirements of warfare demanded the cooperation, coordination and mutual understanding that today's weapons and methods make necessary. The increased tempo of warfare and the greater power of weapons impose upon all soldiers the obligation to seriously endeavor to know the capabilities, limitations and problems of all branches of the armed forces. The complex organization, the intricate equipment and the high degree of specialization of a modern army preclude any man becoming an expert in all its fields. But if each in his own field is to give the greatest service, and to receive the maximum support and assistance, he must know what is expected of him and what he may expect from others. The closer we can come to thinking in terms of the whole team rather than the elements of it, the more smoothly and efficiently will the team perform when the occasion to use it arises.

"If the Armored Cavalry Journal, through its 'Other Branches' Section, stimulates a desire for knowledge and understanding of the branches other than one's own, it will perform a real and commendable service."

Robert T. Frederick

Major General, U. S. Army,
Assistant Commandant, The Artillery School,
Officer In Charge of Seacoast Branch

COAST ARTILLERY CORPS

Seacoast Artillery

*by Captain Richard P. Fullmer**

SEACOAST ARTILLERY is an effective defense of the coast. That coastal defenses are not everywhere begs the question. It has been clearly proven that wherever seacoast armament is emplaced, it is a strong deterrent to assault, even after the most intensive preparation.

Fortunately during the last conflict the seacoast defenses of the continental United States were not called on to actively engage the enemy, but in no way does this render these defenses outmoded or unnecessary. On the contrary, since these defenses represent the final barrier to any enemy water-borne landing, their importance and vitality must never be underestimated nor allowed to deteriorate.

The following examples effectively illustrate the contributions made by seacoast defenses in the destruction, detention or withdrawal of attacking naval forces.

In 1915 a combined Anglo-French Fleet tried to force the Dardanelles; Turkish seacoast defenses frustrated this effort and the Allied Armada suffered a decisive defeat. Naval forces generally regarded fortified areas with extreme caution subsequently, and in 1941, the mere existence of the harbor defenses of Manila and Pearl Harbor dissuaded the Japanese from direct assault. In 1942, Corregidor and its attached forts alone denied to the Japanese the use of captured Manila harbor facilities for five months.

The Japanese were surprised by the resistance offered at Wake Island, too. The meager Marine seacoast defenses there, consisting of six 5-inch guns, sank seven Japanese warships, including one cruiser, and damaged two more before being finally reduced and overwhelmed. Dieppe's seacoast defenses beat off a heavy Commando raid that had lost the element of surprise, and in six hours the Allied forces lost more than two-thirds of their ships and men.

The seacoast defenses of Tarawa, manned by Imperial Japanese Marines, ravaged and almost beaten flat by a murderous naval and aerial bombardment, took a cruel toll of our attacking forces. The Soviet seacoast defense of Sevastopol, besieged by land and denied all help, fought off frequent fierce, determined German assaults, and successfully repulsed the enemy for two months. The French coast artillerymen in Oran, Algeria, survived aerial and heavy naval attack. During the naval engagement, the British reported that the shore batteries were active and accurate up to 24.000 yards. In fact the major battery at Oran was never silenced. The stubborn defenses at Lorient, Saint Nazaire, Calais and Dunkirk, interfered seriously with Allied supply and sharply reduced the speed and security of the Allied advances. As these examples demonstrate, assault operations against fortified areas have always been costly.

Consider, especially, the role and value of Corregidor. In an effort to speed up the Bataan campaign, the Japanese began a series of amphibious operations at the southern tip of the Bataan peninsula. The intention was to place Japanese troops behind the embattled Americans on the peninsula, cut off their retreat, and so force a quick end to the campaign. The first Japanese landing was attempted within the range of the seacoast armament on Corregidor. The old, obsolete 12-inch mortars of the seacoast artillery smashed that amphibious attack completely. No attacks were ever launched within seacoast armament range again. From January 2, when the Japanese took Cavite just across the bay, until May 5, 1942, Corregidor was under constant aerial and artillery bombardment. One by one the smaller, unprotected, rapid-fire batteries were knocked out but the turreted and casemated large-caliber guns continued firing to the very end. It is a source of endless pride to the Coast Artillery Corps that Fort Drum's 14-inch turret battery fired its last defiant round at the Japanese only five minutes before the final surrender by General Jonathan Wainwright. This heroic resistance of Corregidor was an inspiration to the Nation.

Clearly, then, the first protection of Manila and the last resort of American troops against Japanese aggression was the seacoast artillery of the Harbor Defenses of Manila and Subic Bay.

At home, alerted seacoast defenses protected our harbors and anchorages from attack. A German submarine slipped into the harbor at Scapa Flow and torpedoed a British cruiser early in the war. Seacoast defenses on both coasts prevented this from happening to us.

Troops performed the usual seacoast mission—to deny important harbor or island facilities to the enemy. This mission, by itself, necessitates a technical and tactical organization that is highly specialized and extremely flexible. It requires personnel thoroughly indoctrinated with the tactical concepts of several combat arms, highly skilled in technical artillery services, and expediently adaptable to all eventualities. In almost every instance of determined seacoast resistance to landing assault, the artilleryman has had to be a gunner,

*Coast Artillery Corps.

a combat engineer, a demolitions expert, an infantryman, and in many instances an expert in electrical, and highly intricate mechanical equipment.

A modern seacoast artillery battery is a complex unit. The combined efforts of many men are required to fire one salvo from a modern coast artillery 16-inch battery at a naval target. Some men operate or serve the pieces; others are assigned many different important duties—operation of the radar, computation of firing data, maintenance of communications, running the power plants, observation of the target and of firing, and technical maintenance of delicate equipment. Well trained crews can deliver two accurately aimed one-ton projectiles every sixty seconds; at this rate, a 16-inch battery can fire with pin-point precision twelve tons of high explosive projectiles every five minutes. Behind this firing, the complex fire control structure contains a highly skilled radar section which locates and tracks targets under any conditions of visibility and furnishes information on target location constantly to the computing section. The computing section operates an electrical data computer which converts the radar information on the present location of the target into future azimuth and elevation settings, *i.e.*, the direction and distance of the target, for the guns. These settings are electrically transmitted to the gun pointer and the elevation setter of each gun. In the majority of cases, this equipment and personnel are well protected in deep, strong, reinforced concrete emplacements.

In this impregnable self-sufficiency is rooted the tough fiber of seacoast artillery resistance to assault. All mobile seacoast batteries attempt to approximate the indomitable indestructibility of these fixed installations by digging in and preparing for the contingency of final assault.

Seacoast troops man artillery that includes 16-inch rifles, 8-inch and 6-inch guns (most of which are at present casemated), 155mm Long Toms and 90mm dual purpose guns, as well as 40mm automatic weapons. In the 90mm and 40mm classes, the seacoast troops fire antiaircraft missions in addition to their normal seaward mission.

In this respect it may be noted that, contrary to public opinion, our present seacoast matériel is not obsolete but is perfectly capable of destroying any of the present water-borne vessels of modern warfare. However, it is visualized that in the not too distant future practically all of this matériel will be replaced by guided missiles.

Coast Artillery troops also operate underwater mine defenses, including the Army Mine Planters. The submarine mines planted by the Coast Artillery are the largest and most intricate mines used by the armed forces. All of these mines are controlled electrically from shore and are a threat only to enemy vessels. When hostile vessels, surface or undersea craft, are detected in the mined areas, individual mines closest to the enemy may be set off deliberately by the shore control station, or the entire mine field may be energized so that the approach of a vessel to a mine detonates the mine.

All these normal operations of the seacoast troops, including the operation of seacoast searchlights, require long and intensive training. Added to them, however, is training for individual combat, for infantry combat, for light field engineering and field fortification, for field orientation and survey work, for demolition work, and for basic field artillery firing. In the latest war, seacoast artillerymen were hurriedly transferred into other services and arms and rapidly trained to perform the duties of their new assignments with a minimum of difficulty. Whole units were converted overnight into field artillery units, infantry replacement units, port battalions, and quartermaster units without extensive instruction. The speed with which this transformation was accomplished proved the adaptability of the seacoast soldier and the validity of this hard-won fundamental training. Coast Artillery units participated in landing operations as shore parties, infantry troops, artillery troops, military police and performed a host of other duties, sometimes with only a briefing on board the assault vessels before disembarking.

The knowledges and skills of the seacoast artillery troops were used in this latest war in so many diverse ways that the identification of seacoast troops was almost lost in the constant turmoil and stress of the struggle.

In the near future, the advent of radically new weapons will provide the attacker with means for swifter, more diversified and powerful thrusts as well as improving the accuracy and strength of the defender. Therefore the coast defender of tomorrow must be capable of rapid movement and concentration of power against any threatened point on American coasts. The Coast Artilleryman's background of proven adaptability, versatility and fundamental understanding of combat principles has prepared him well for solving the ever changing problems of coastal defense. The tested flexibility of seacoast organization and the demonstrated resilience of the seacoast soldier are good foundations on which to build now a force capable of quickly meeting and absorbing the enemy's hardest blows and so helping win the needed time for our national mobilization and organization for the counterblow. Intensive training, constant drill, endless repetition of defense exercises, minute scrutiny of methods and procedures, target practices, field maneuvers, and continuous research for the development of new and better weapons, all these will drive home to each seacoast artilleryman his ultimate purpose, to move, stand and fight.

For the present he will man the conventional seacoast artillery but with the development of new weapons, rest assured that new defenses will replace the old and the seacoast artilleryman will be ever vigilant to insure that at all times he is prepared to do his part in the defense of our country at home and on our island outposts.

VETERINARY CORPS

Veterinary Activities in World War II

*by Lieutenant Colonel William E. Jennings, V. C.**

When World War II ended in August, 1945, there were 41,600 horses and mules in the Army, of which more than 17,000 were in overseas theaters. The peak animal strength of 60,170 during the war was reached, however, on December 31, 1943. Colonel Jennings gives a thorough picture of what these animals did and how they were cared for during the war.

ARMY VETERINARIANS so closely guarded the health of animals in World War II that there was not a single epizootic among the thousands of horses, mules, war dogs and pigeons engaged in military operations. That accomplishment, through the application of modern Veterinary Medicine, including an effective program of immunization, stands unparalleled in the history of war.

And to that may be added the fact that, even if there had been a serious outbreak of disease in military animals, the veterinary service of the United States Army was effectively organized to handle it. Due in large part to the experience gained in the first world war and to research and development in the years that followed, the United States Army had organized and developed one of the best systems of veterinary service for animal care in military history, prior to the beginning of World War II.

By act of Congress, the Veterinary Corps of the United States Army was organized on June 3, 1916. In connection with the care of public animals, the veterinary service has a fourfold responsibility. First, it is charged with inspecting all animals offered for sale to the Army, to determine their physical fitness and freedom from communicable diseases. Secondly, it functions to protect the health and preserve the efficiency of those in service. Thirdly, it is also charged with the veterinary technical supervision of the Quartermaster Remount Breeding Program. Finally, when animals become unfit for military duty, yet are still serviceable for agricultural or commercial purposes, they are sold to civilians but provided only that they are certified by a veterinary officer to be free from communicable disease.

This is an important responsibility in connection with the prevention of the spread of communicable diseases among civilian-owned animals. Previous to World War I, excess Army animals were sold without regard to their state of health. As a result, such diseases as glanders, which was rare in the United States prior to that time, was spread to every county and city east of the Mississippi. It was not until the close of the

*Chief, Animal Branch, Veterinary Division, Surgeon General's Office.

century that this highly contagious disease of equines was brought under control. In the meantime, glanders took a toll from farmers and owners of horses calculated in the hundreds of millions of dollars.

To that costly lesson in animal management, and animal disease control, were added a number of other lessons, all learned in an equally costly and in an equally unforgettable way—all prologuizing the eventual organization of a competent veterinary service. In the Spanish-American War, for example, the purchase of unfit animals was so notorious and the loss of animals at the volunteer and regular army camps was so appalling that newspapers blazoned those facts alongside shocking reports of the death of troops from filth-borne disease.

During the first world war the United States Army utilized approximately 572,000 horses and mules, of which over 191,000 were overseas. It is estimated that the combined animal strength of the Allies in that war was 750,000.

At the beginning of the period of limited emergency (September 8, 1939), the animal strength of the Army was 23,283. From that date until July 1, 1940, the animal strength remained at about the same level. On July 1, 1940, the Army embarked on a program of rapid expansion and The Quartermaster General began to procure, immediately, relatively large numbers of horses and mules. During the recent war, on December 31, 1943, the animal strength reached its peak—60,170 animals. With cessation of hostilities in August 1945, the horse and mule strength of the entire Army was 41,600, of which more than 17,000 were in overseas theaters. The above figures are for the United States Army only, and do not include many thousands belonging to Allied Armies, under American control and for which the United States Army Veterinary Corps rendered service.

On July 1, 1940, when The Quartermaster General began to procure relatively large numbers of horses and mules, construction of new veterinary hospitals and additions to existing hospitals at posts, camps, and stations in the United States, was initiated at once. The Veterinary Division, Surgeon General's Office, had anticipated that need and already had detailed plans for a group of hospital units from which complete hospitals could be constructed to accommodate the number of sick and injured animals at posts, camps, and stations. The individual units consisted of medical clinics, surgical clinics, 30-stall ward buildings, 20-stall contagious ward buildings, dispensaries, administration buildings, barracks, dipping vats and corrals. These plans proved of great value, particularly in view of the indefinite premise upon which the wartime animal strength was projected.

Hospital facilities were established on a basis of 3.5 per cent of the animal strength of a command, that being the rate which experience had indicated was proper for the zone of the interior as compared with a rate for theaters of operation of from five to 12 per cent, or even higher, depending upon the extent and type of combat activities.

With the advent of motorization and mechanization, methods of evacuating animal casualties changed. The animal-drawn ambulance of World War I was discarded and the leadline, another development of that war, was used less and less for leading casualties back to treatment stations. Mobile units and detachments serving with tactical commands were not charged with care of unserviceable animals. Temporarily incapacitated animals were evacuated through a chain of specially equipped units for further treatment and hospitalization. Permanently unserviceable animals and those which were uneconomical to salvage were destroyed immediately. Provisions were also made for the quarantine and disposition of all captured and stray animals. To insure that diseases would not be spread by such animals, all were placed in quarantine for 21 days, immediately upon receipt.

In this diagrammatic chain of evacuation, veterinary detachments, attached to each regiment and to smaller independent mounted organizations, operated dispensaries or aid stations where disabled animals were collected, treated, sorted, and their disposition determined. To the rear, still in divisional area, were veterinary companies or veterinary troops which served as connecting links between the front-line installations and the Veterinary Evacuation and Veterinary Convalescent Hospitals located in the rear of the combat zone. In the zone of communications and the zone of the interior, veterinary station hospitals of 25- to 150-stall capacity provided the necessary hospitalization facilities.

In the equipment initially provided for the Veterinary Company (Separate), the motorized evacuation elements consisted of 2½-ton, 6 x 6 trucks with stock-rack bodies. Later, when cavalry porté units were organized and equipped with prime-movers and semi-trailers for transporting horses, the Veterinary Company's 6 x 6 trucks were exchanged for the cavalry's type of trans-

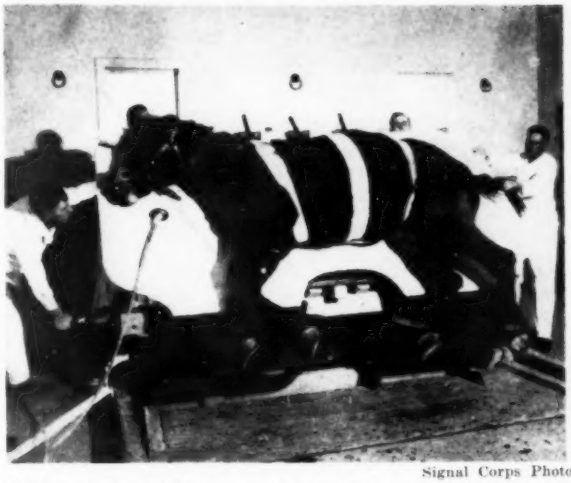
Pack animals were indispensable to troops fighting in Burma. A pack train is shown here carrying food, ammunition, weapons and other supplies.

Signal Corps Photo

portation in the interest of uniformity. Under the simulated combat conditions of the Louisiana Maneuvers, in 1940, the evacuation trailers were found to be inferior to the 6 x 6 trucks, formerly used by the veterinary companies, for cross-country use. World War II experiences further proved the worth of the 2½-ton truck with stock-rack body in getting over rough ground to evacuate sick and injured animals.

Added war experience proved and projected plans for the global war clearly indicated that animals were never to be used in large numbers for combat operations. Therefore, two large Veterinary Station Hospitals (23d and 24th), and one Veterinary General Hospital (30th), which had been organized and trained in the United States, would not be needed or utilized overseas. Accordingly, all three were inactivated and their personnel assigned to veterinary evacuation hospitals and veterinary teams which proved to be of inestimable value in rendering the necessary veterinary care for sick and injured animals. These veterinary teams were organized by War Department approved Tables of Organization, as follows: a motorized evacuation detachment of 1 officer and 10 enlisted men; one of 3 enlisted men only; a hospital detachment of 1 officer and 19 men, capable of hospitalizing 30 animals; a hospital detachment of 2 officers and 35 men, capable of hospitalizing 75 animals; an animal service detachment of 1 officer and 4 men for attachment to small mounted units, such as pack troops; and a headquarters animal service detachment of 1 officer and 2 men, to supervise three or more animal service detachments. These units performed the same functions as their larger counterparts and all of them were self-contained to render veterinary service.

In addition to the valuable service rendered by veterinary units in the care and treatment of the sick and injured animals, the United States Army Veterinary Service performed many other outstanding services in connection with animals not only for the United States Army but also for the Allies. In January 1944 the British Army sent a mission to the United States for the purpose of purchasing 2,200 mules for use by British forces. The United States Army was responsible for the care and movement of these animals to the New York Port of Embarkation. Further, as British Army veterinary personnel were not available to accompany these animals onward from New York Port of Embarkation, United States Army veterinary officers and enlisted men were assigned to each ship and charged with the professional care of the animals while en route to their destination. Only one of the 2,200 mules was lost en route to their destination—Calcutta, India. In recognition of the efficient manner in which this group of animals was assembled, cared for and shipped to their destination and the splendid condition of these animals on arrival in India, the Director of the British Army Remount Service dispatched an official communication to the Chief of Staff, U. S. Army, expressing his high regard for the invaluable assistance rendered in connection with this project.



Signal Corps Photo

With a mule safely strapped on an operating table at the 23d Veterinary Station Hospital at Fort Bliss, the table is then lowered to a horizontal position.

As a result of the long war with Japan, the Chinese Army had suffered many reverses and defeats. The veterinary service, too, had suffered severely and the animals were in a deplorable condition. To assist the veterinary service of the Chinese Army in caring for the many thousands of animals so vitally needed for the transportation of supplies to units of the Chinese Army, over 400 United States Army veterinary officers and enlisted men were assigned, in a liaison capacity, to the various units of the Chinese Army. This liaison veterinary personnel worked side-by-side with their Chinese colleagues, establishing veterinary schools, horseshoeing schools, and schools for instruction in animal management and packing. In addition to this liaison veterinary personnel, the following United States Army veterinary units were attached to the Chinese Army to assist the Chinese veterinary service in rendering veterinary care, evacuation, and treatment for all sick and injured animals: four veterinary companies (Separate), two veterinary evacuation hospitals, 28 veterinary animal service detachments. As a result, countless numbers of animals were saved which would otherwise have been lost; sick and injured animals were returned to duty, promptly; and the veterinary service of that Army was revitalized to a point not expected by even the most optimistic.

Many other equally outstanding services rendered by the United States Army veterinary service during the recent war could be mentioned. The work done by U. S. Army Veterinary Corps in Iceland in the control of diseases which were devastating the animal population in that country was of the very highest order. In the Military Governments established in Germany and Japan, and the governments established in countries which had been occupied by the enemy,

United States Army veterinary officers did outstanding work in the preventing and controlling of animal diseases which were depleting very rapidly the food supply in these countries, where acute shortage of foods of animal origin already existed. Vigorous effort against such devastating diseases as foot and mouth disease, rinderpest, surra, hog cholera, and others, through vaccination, quarantine and isolation, placed these diseases under control and prevented their further spread.

As a parallel of the service rendered by the United States Army Veterinary Service to the Chinese Army may be mentioned that furnished to the Italian Army after its defeat. The veterinary service of that army was completely disorganized when the Italians surrendered. There were thousands of valuable animals, all well-seasoned by combat, which were absolutely essential to our operations against the German Army in the rugged, mountainous terrain of Northern Italy. The Italian veterinary units were reorganized and equipped and, under United States Army veterinary supervision and direction, proved to be of most vital importance in the successful completion of that campaign.

In the transportation of animals by rail, water and air, the United States Army veterinary service played an important role and, ofttimes, the leading part. During the recent war, several thousands of United States Army animals were transported from the United States to overseas commands without a single outbreak of communicable disease occurring and with the exceedingly low mortality rate of less than 1 per cent as a result of disease and injury. Further, all animals landed at ports of debarkation in such excellent condition that theater commanders praised the splendid manner in which animals were handled while being transported overseas. Indeed, the exclusion of disease, the maintenance of a low mortality rate, and the delivery of animals at their destination in such excellent condition are all remarkable accomplishments when it is considered that animals were transported great distances, frequently being aboard ships for periods ranging from 45 to 60 or more days with much of the time spent in tropical climates.

Over 9,000 animals were moved by air from Burma to China to stem the advance of the Japanese forces on our vital air bases in China. From these bases, the U. S. Army 14th Air Force (Flying Tigers), late in the war assisted by the U. S. Army 10th Air Force which had done so superbly in assisting the ground forces in retaking Burma, sent almost daily missions to disrupt and destroy the Japanese communications, depots and transportation of supplies in that part of China occupied by the enemy and in the China Sea and those islands adjacent thereto. In the movement of these 9,000 animals, and such a movement is without precedent, not one animal was lost or incapacitated. Planes of the C-47 type were used exclusively—four animals and their equipment to each plane. Altitudes from 14,000 to 18,000 feet and in some instances 20,000 feet were necessary to clear the jagged, snow-covered peaks of the Himalayas. Four to 10 hours, depending upon the destination in China, were required to complete each flight. The U. S. Army Veterinary Service was responsible for all loading and unloading operations. The enviable record established in this movement of animals will remain a challenge for years to come.

A review of the records of 43 of the largest rail shipments of U. S. Army animals made in the United States during World War II indicated that in moving 20,000 animals in shipments averaging 465 animals each and requiring from 3 to 10 days with an average of 5½ days in transit, only 93 animals were lost. Of this number, 51 died from exhaustion and overexposure of one 8-day shipment of 370 mules in open stock cars under unusually severe weather conditions. They had been loaded originally during a freezing rain and experienced unusually cold weather throughout the entire trip and were not unloaded for feed or water during the last 32 hours of the journey.

In this instance, the stock cars had not been protected with tar paper, as is customary when shipments are made in severe weather. In another shipment of 1,091 moved from a very cold to a very warm station under rather severe conditions, 31 animals died as a result of equine influenza, complicated by overexposure and exhaustion. The above two instances were the only ones made during the war where losses of any significance occurred incident to shipping. In all shipments only two animals died as a result of injuries received during shipment. The rail shipments of animals during World War II proved again conclusively that any deviation from the accepted, time-proven practices will lead invariably to unnecessary losses—not only from the mortality standpoint but also from the standpoint of loss of condition and animal effectiveness on arrival at destination.

The remarkably low incidence of disease among U. S. Army animals during the recent war can be attributed entirely to the established system of prevention and control of communicable diseases by quarantine, isolation and vaccination against the common highly fatal diseases affecting horses and mules such as anthrax, tetanus, equine encephalomyelitis (sleeping sickness). One needs but to review the results of the widespread epizootic of equine encephalomyelitis in the United States in the summer of 1938 to be convinced of the proven value and efficacy of the U. S. Army vaccination program against this disease. Since 1939 when this program was inaugurated, only one U. S. Army animal has died as a result of this disease, which is the most serious disease affecting horses and mules in this country. Many civilian-owned animals in areas adjacent to U. S. Army posts have been affected during the past seven years and the mortality rate among affected animals has been unusually high.

The routine administration of tetanus toxoid which

was initiated as a routine measure in 1941 has eliminated tetanus from military animals. Immunization against anthrax prevented even a single occurrence of this disease in Army animals though many animals were used in overseas areas where anthrax was prevalent.

Glanders, the scourge of all former wars, did not appear due to the rigid program of testing and prevention used by the Army since 1918. Mange and other insect-borne skin diseases were held to a minimum.

It must be remembered that during World War II, U. S. Army animals and animals belonging to our Allies were used in tropical climates and in the Orient where diseases, unknown in this country, are ever prevalent. A striking example of such a disease is surra —a blood-borne (Trypanosome) disease which is rapidly transmitted by biting insects. This disease appeared among the animals engaged in the Burma campaign. In the rear of that zone of combat a U. S. Army veterinary laboratory was established to study this disease and to test those drugs which the veterinary service in those foreign countries had accepted as being efficacious in the treatment and prevention of this debilitating disease of equines.

The U. S. Army Veterinary Research Laboratory was established at the Quartermaster Remount Depot, Front Royal, Virginia, in 1939 to study the more common diseases affecting horses and mules. At this laboratory also the toxic affect on animals of several drugs and chemicals used in this country and foreign countries in the treatment and prevention of diseases of horses and mules, have been tested. Further, viruses of several diseases obtained from clinical cases in main, have been tested to determine whether or not those viruses will remain viable in animals and whether or not animals may be a reservoir of these human viruses. The importance of these studies cannot be overemphasized. At this laboratory several important scientific investigations have been made, the economic importance of which to the livestock industry in this country cannot be measured from the monetary standpoint. The work done in that laboratory has proven conclusively that equine periodic ophthalmia (moon blindness)—a disease of world-wide distribution and known to man from time immemorial—is caused, in part, at least, by a vitamin deficiency. Riboflavin-deficient diets tend to produce this disease. There may be additional nutritional factors involved but the addition of Riboflavin in the amount of 40 milligrams daily in the feed to an animal will prevent the occurrence of this disease. The causative agent of equine influenza—a virus—was first isolated at this laboratory. Studies of this virus are continuing.

Through the application of sound principles of animal management, the use of time-proven methods in the shipment of animals, the application of the principles of modern veterinary science and the investigation of all outbreaks of contagious diseases affecting animals, the record of the U. S. Army Veterinary Corps in World War II stands unprecedented. Much credit is due to the invaluable assistance rendered by those civilian veterinarians who, seeing service in the U. S. Army, were in no small way responsible for the splendid achievements of the veterinary service of the U. S. Army during this most recent and devastating of all wars known to man.

Signal Corps Photo

An American soldier of an evacuation hospital in China unloads a horse of the 22d Chinese Division as the division was flown over the "Hump" from Burma in 1944.

ARMY AIR FORCES

Air-Ground Cooperation

by Israel Horowitz

THE problem of coordinating the efforts of ground and air units against enemy forces is intimately connected with tactical and strategic considerations. This was true in the last war and will hold true even more in any future conflict.

Strategic bombing of cities and industrial centers, with its reduction of the enemy's industrial potential and will to resist, bear directly on the type of ground operations that yield the greatest results. The isolation of battle areas by the process of interdiction has often given ground troops freedom of action otherwise unobtainable. U. S. Army Air Forces action, in close consort with combat ground troops, sped the successful culmination of campaigns.

Often it is difficult to delineate sharply between air actions of different types. They overlap both operationally and functionally; many times a single air action is of importance strategically and tactically. The classic concept of "air support of ground operation" is practically obsolete. More accurately, the interacting teamwork that brings victory on the battlefield may be described as "air-ground cooperation."

The large-scale attack at St. Lo, begun on July 25, 1944, provided one of the most spectacular examples of this type of cooperation in World War II. On that day, tons of bombs and incendiaries saturated an area 3,000 feet by 7,000 feet south of St. Lo–Periers highway. The first phase of the attack lasted two and a half hours and utilized 1,500 Fortresses and Liberators, 400 mediums and 550 fighter-bombers. The effect on German troops was devastating, casualties and shock having reduced greatly their power to resist. Enemy communications were completely disrupted.

American ground commanders lost no time in following up their advantage. They found the 14th German Paratroop Regiment, which had been holding up the American advance south of St. Lo, hard hit and largely demoralized by the bombardment. American commanders were united in agreeing that the major obstacle to their advance after the barrage was not the negligible enemy resistance. Rather it was in the difficulty of moving motorized troops over the incredibly pocked and cratered terrain.

Lead tanks, spearheading the advance, were fitted with two-way, very-high frequency radio sets. This made possible instantaneous communication between forward ground elements and the fighter-bombers ranging the skies above them. To insure that no unreasonable requests for air action were transmitted, the foremost elements of the tank columns carried qualified pilots. These grounded airmen took charge of ground direction of aircraft and advised ground commanders on the best use of air support.

In the normal prosecution of a campaign, any ground unit commander may initiate a request for air support. The request then will work its way up through normal command echelons until it reaches a command post which includes an air support party. Upon receipt of the request, the air support officer and the commander of the ground unit with which he operates immediately consult as to its practicability. Reaching agreement, they immediately forward their recommendations to the air support control.

Responsible officers at the air support control consider the request with respect to its furtherance of the general tactical plan. Special emphasis is placed by these officers on conditions affecting the successful completion of the air action. Of utmost importance in their deliberations are the number of airplanes required, the number of airplanes available for use, weather conditions along the route and at the target, and the type of bombs and ammunition required.

Data necessary for a true appraisal of the mission must be incorporated in the original request. Such data includes information detailing the type of target, its exact location and the direction and speed of its movement, if any. The location of friendly troops with respect to the target should also be included as well as the estimated time limit for effectiveness of the desired raid.

If the request is approved, it is forwarded in attack order form directly to the airfield of the supporting unit for compliance. Depending upon its state of readiness to insure success of the attack, the operational unit at the airfield takes the necessary action. The decision of the air support control, whether favorable or unfavorable, is transmitted through channels back to the ground commander who originated the request. If unfavorable, this message details the reasons which make the requested mission impossible.

As soon as the airplanes return to the field the air unit commander evaluates the results of the mission. This Intelligence and all pertinent data are reported to the air support control where the attack order originated. In addition, the ground commander, through the same channels used to route the original request,

reports the result of the mission as viewed from the ground and as affecting further ground operations. Thus, the air support control is provided with a rounded picture of the entire operation.

Since aircraft are more vulnerable and less easily replaced than artillery, only those targets not easily reached by artillery are normally assigned to supporting aviation. Air support cannot be guaranteed. It may be limited by weather, enemy action or mechanical failure.

The success of any combined air and ground operation is dependent primarily on accurate timing. Ground commanders must compute, with a high degree of accuracy, the time allowances for effective air action. Such computation, basically, includes time lapses for the transmittal of requests through channels, and for aircraft to leave the ground and reach the target area. Other conditions will vary with particular conditions.

To allow ground troops to take maximum advantage of air support and to protect them against casualties inflicted by their own aircraft, the last element of combat aviation may communicate with the ground. This communication may be either by flare or radio. The ground attack may be launched at the prearranged signal or at the expiration of a previously agreed upon time limit.

The types of missions used by tactical aviation in the support of ground troops resist all-inclusive cataloging. However, they may be said to fall into six general categories.

Combined reconnaissance bombing missions allow aircrew members the greatest latitude of action. The target is not usually detailed in advance. Rather it is developed and attacked at the initiative of the pilot.

Air attacks are conducted against enemy defensive organizations in the path of support ground forces when time does not permit the use of other attack methods. Such attacks, of particular value to mechanized and armored forces, add the fire power and moral effect of air action to ground operations, often essential to insure timely success.

Hostile ground units on the move toward a supported force are normally a remunerative bombing target. Air attacks on enemy reserves and reinforcements serve the purpose of blocking and delaying their movements, or effecting their destruction or demoralization.

Of major importance are attacks on approaching mechanized and antitank units before they gain contact with the supported forces. Often the destruction of the supply and maintenance elements of such enemy units can quickly render them impotent.

Attacks on hostile aviation serve the obvious purpose of achieving and maintaining control of the air. Supported ground forces are unable to operate with freedom unless hostile air attacks are reduced to a minimum.

In the case of operations in the support of parachute troops and other airborne units, the prime objective is to gain and hold air superiority over the contested terrain. Security must be provided for airborne troops while in transit and during landings, the periods when they are most vulnerable. Air attacks are aimed at enemy ground defenses at or near the objective until the goal of the supported unit has been attained. In addition to these targets, offensive air action is directed against enemy reserves or reinforcements that threaten the supported force.

Although no foolproof method exists which insures immunity to troops from bombardment by its own aviation, the observance of certain safeguards can keep such tragedies to a minimum. Rapid dissemination of intelligence is the most important single factor in this connection. Communication to the associated air support agency by the ground commander relative to any changes affecting the disposition of the troops in his command must be given immediate priority if such changes occur subsequent to a specific request for a support mission. Other safeguards are the thorough indoctrination and training of air and ground personnel in the visual identification of both enemy and friendly uniforms, matériel, planes, formations and signals.

Today new technical advances are being put to tactical use in increasing the sum of air-ground cooperation knowledge.

Two companies of the 41st Infantry Battalion, a part of the Second Armored Division at Camp Hood, Texas, recently experienced something different from their predecessors in armored infantry basic training. Under a six-day program these companies went through a course in Air Transportability.

Each company trained for three days. The first two days they learned the technique of loading and securing their equipment into a Troop Carrier ship. On the morning of the third day they loaded the planes with a good sample of what they might carry on an actual mission—jeeps, weapons, ammunition, rations and water. Then the men donned combat equipment and parachutes and went for a short flight.

Though such training is of combat nature, it has a valid peacetime use too. These men, being air-trained, could be rapidly transported within the country in the event of disaster—flood, fire, earthquake —when they would be needed to keep order and protect property.

TANK ARMAMENT

*by the School of Tank Technology**

1. Design Procedure

THE tank-mounting designer can lay out a mounting for the gun with sighting gear and laying controls, building around them a fighting chamber with sufficient space for the crew, ammunition and other storage. He must fit this fighting chamber into the limits of weight, height and space between tracks allowed him by the general designer of the whole tank in view of transportation restrictions, and enclose it with armor of a specified thickness, in which must be fitted adequate means of outside vision.

If the mounting designer cannot get all this into a turret with all-round traverse and yet keep within the limitations of the general designer, the latter may be forced to offer the soldier a limited-traverse equipment, like the German Jagdpanther and Jagdtiger. The soldier has then to decide whether a powerful gun and thick armor are worth more tactically than 360 degrees of traverse.

2. Selection of a Tank Gun

All battle experience goes to show that infantry are the most important "arm" in any army. The destruction of the enemy infantry is the main purpose of all arms, including tanks, in our own army. Thus, for most types of tank, the enemy infantry, the defenses they hold, and their supporting artillery, are the main targets. The best type of projectile against such targets is high explosive shell.

Unfortunately, all armored vehicles are vulnerable, not only to ground antitank guns, but also to antitank guns mounted in enemy armored vehicles. Thus, the tank may be prevented from carrying out its main task, unless it can first defeat the enemy "armor." This requires an armor-piercing projectile.

Against infantry and "soft" targets, H.E. shell, even though small, will usually have some effect, whether these be direct hits or only near misses. On the other hand, against "hard" targets (i.e. tanks), only a direct hit with a suitably designed shell large enough to pierce the armor will be effective. In other words, the requirements for H.E. performance are not very critical, whereas those for armor penetration are extremely so. Thus, although H. E. firing may be the main purpose of tanks, A.P. firing will require more attention in design.

For armor penetration, the best type of projectile is the high velocity shot or shell, which depends mainly on its weight and striking velocity for effect. This necessitates a gun of caliber large enough to fire a shot of adequate weight, with a long barrel in which to develop sufficient velocity, and a large chamber in which to burn the amount of propellant required to provide the velocity. This results in a large and heavy cartridge and a cumbersome gun of short life.

For high explosive effect, one requires a shell with a large capacity for explosive filling. To get this, it is generally considered that the caliber of the gun should be at least 3 inches. If this shell is to be fired from the same gun with the same velocity as the A.P. it will have to be so thick-walled to withstand the severe firing stresses, as seriously to reduce its capacity for H.E. filling. Moreover, high velocities reduce the effectiveness of H.E. shell in several ways. For H.E. then, it is much better to use a low velocity, high capacity shell, which only requires a short gun with a small charge. This gives a small round, of which a large number can be carried in the tank, and a gun which is easy to mount in a turret and has a long life. Such a gun will, of course, be unable to fire any A.P. projectile, except hollow charge, which is inferior in accuracy and penetration.

The size of H.E. shell required is unlikely to increase much in the future because infantry can become neither more splinter resistant, nor able to make stronger foxholes! Tank armor, however, is getting thicker and thicker, so that A.P. weapons must get bigger and bigger as time goes on.

The soldier is then faced with the following problem:

He has to ask the designer to give him an A.P. projectile and gun powerful enough to penetrate enemy armor, yet this is only for what is really a secondary or support rôle. For present conditions this gun will probably have a caliber of over 3 inches. Shall he also ask the designer to produce for him a separate gun for firing H.E. to carry out the main task, and relegate the A.P. weapon entirely to a support rôle, or shall he fire his H.E. out of the A.P. weapon (probably with a reduced charge to give lower velocity)?

If he uses the A.P. weapon for H.E., he will not be able to carry many H.E. rounds, because of their uneconomically large cartridge cases, and because some of the stowage will already be occupied with A.P. The large cartridge will give only a low rate of fire. Moreover, the rapid wear with A.P. will necessitate frequent calibration for indirect fire and semi-indirect H.E. shooting.

If separate A.P. and H.E. weapons are asked for in emergency the A.P. weapon must, of course, be able to fire H.E. and the H.E. weapon hollow charge (in lieu of A.P.).

The decision the soldier arrives at, will depend on tactical considerations outside the scope of this article.

3. The Tank Gun Designer's Problem

The ideal tank gun should fulfill the following major requirements in order of importance:

**The Tank*, British publication.

(1) A light, short cartridge, the complete round not weighing more than about 45 lbs. with an extreme upper limit of 65 lbs. when the gun is mounted with limited traverse in the hull of the vehicle.
(2) An adequate life.
(3) A barrel as short as possible, with center of gravity as near the breech as possible.

Such other features as weight of projectile, caliber, and muzzle velocity must be so adjusted as best to fit the above and yet provide the specified performance. It should be noted here that the weight of the gun is of minor importance, although lightness is desirable from the point of view of turret balance.

For H.E. firing only it is quite easy to comply with the foregoing specification, but modern penetration requirements, even when special tungsten-carbide-cored shot are to be used, are so difficult to meet that it may not be possible in the future to provide a gun with reasonable life without exceeding the cartridge weight limitations—particularly if an all-round traverse turret is insisted on. It is important to note that the difficulty does not arise in loading the gun, but in getting the ammunition out of the stowage into a position from which it can be loaded. In this situation the fixed Q.F. cartridge ceases to be the quickest and easiest to handle inside an armored vehicle. Instead the round may have to be split into two or more easily handled components —the Separate Q.F. cartridge.

4. Some of the Problems of the Mounting Designer

The first endeavor of the mounting designer is to give a sufficient arc of elevation and depression for the weapons and yet provide adequate protection and ease of control.

If the arc is large it will be difficult to design a mantlet which does not leave gaps at the top or bottom at full depression or elevation, and is also completely splash proof against heavy small-arms fire. Current British practice is to provide 20 degrees elevation and 12 degrees depression, but other countries have had to use less—usually less depression.

As guns get longer and mantlets thicker, the centers of gravity of successive designs of mounting get farther and farther in front of the trunnions. If the designer tries to counteract this by moving the gun back in the mounting he will have to make the turret roof higher to clear the breech of the gun on recoil at full depression. Instead, he must neutralize the muzzle heaviness by a spring or hydropneumatic equilibrator inside the turret.

It is sometimes thought that the designer has difficulty in making the mounting strong enough to take the trunnion pull of the gun. So far is this from being a difficulty that several designers have been tempted to dispense with the recoil system and mount the gun rigidly in the cradle. They have had some measure of success, although other difficulties were introduced.

The recoil system is still then an essential of a tank gun mounting, and there is generally no difficulty in providing sufficient room behind the gun for recoil. If there were not enough room for recoil there would certainly not be enough space to load the large cartridges fired by present-day tank guns. The designer's two problems here are overheating and the use of ammunition of different muzzle velocities.

The function of the buffer is to dissipate the recoil energy of the gun by converting it to heat (due to the friction of oil passing through ports). Obviously, if a high rate of fire is maintained for some time the buffer will get very hot indeed, with the result that the gun fails to run out. Some modern guns may have a very large recoil energy to be converted to heat, so the designer has to provide rather a large capacity of oil to absorb it.

As stated earlier, when a gun fires both A.P. and H.E. it is better to fire the H.E. at a much lower muzzle velocity than is necessary for A.P. This results in a shorter recoil. It is then a problem to design a recoil system which will function equally well with both high and low velocity ammunition and allow sufficient length of recoil for the semi-automatic gear to function both types.

Another question that needs clearing up is the purpose of the muzzle brake. Its function is to reduce the backward momentum of the gun by deflecting to the side or rear some of the high pressure gases which emerge with high velocity from the muzzle after the projectile has left. The principle is the same as that of jet propulsion, the deflected gases giving a forward thrust on the muzzle. In general, a muzzle brake is undesirable on a tank gun, as it greatly increases the out-of-balance of the mounting and causes the gun to "whip" when travelling. It also increases the risk of injury to troops by diverting the blast to the rear. The chief reasons for fitting a brake are:

(a) When the designer "up-guns" an existing vehicle to counter the introduction of heavier armor by the enemy. This enables him to use the original recoil system.
(b) To reduce the amount of recoil energy which has to be converted to heat by the buffer, and so prevent overheating.
(c) To obtain improved steadiness of the vehicle when firing—especially armored cars.
(d) To improve observation by deflecting muzzle smoke out sideways. Whether it is successful in this depends a good deal on the wind and the dustiness of the ground.

5. Further Considerations

In an article of this length it has only been possible to discuss the selection and mounting of a tank gun. Such other topics as sighting and fire control, laying controls and the best layout of ammunition stowage would require a great deal of space to themselves.

FLAIL TANKS

*by Brigadier Nigel Duncan**

Brigadier Duncan commanded the 30th Armored Brigade in the British Liberation Army. This was part of the famous 79th British Armored Division that manned all the specialist armored devices such as Crocodiles, Flails, and Buffalos. Later he was second in command of the Specialized Armored Development Establishment. With his vast war experience with armor and the knowledge gained thereby Brigadier Duncan can well be considered an authority on armor.

MINES appeared in increasing numbers during the campaign in Africa until by 1942 they had become a very serious menace to the movement of troops and vehicles. Vast numbers of both antitank and antipersonnel mines had been laid by the enemy, and since they were covered by antitank or machine guns, clearance by hand was slow and expensive in casualties.

In order to speed up the rate of an advance, a tank was modified to detonate mines by mechanical means. It consisted of a rotor, suspended between arms protruding from the front of the tank, carrying chains on it and revolved by two auxiliary engines behind the turret. As the rotor turned the chains flailed the ground and the force of their impact detonated the mines. The machines were not very reliable but proved effective in Alamein where they were used singly to sweep a lane wide enough for one tank.

From these early machines several later patterns were developed. The last was the Crab, a Sherman tank carrying a rotor which was driven from the main engine and retaining the main armament—in other words as near a standard tank as any specialist weapon could be.

The Crab rotor was nine inches wider than the overall track width to provide a slight margin of safety and to make turning possible. The rotor centers were four feet and three inches from the ground and the radius to the tip of the chain was six feet.

Design of Crab

Later Crabs were self-contouring—the height of the rotor being conditioned by the beat of the chain on the ground, thus enabling it to follow slight inequalities better than those first models where depression of the rotor was limited by a stop. The end plates of the rotor carried wire-cutting blades which ran between cutter blocks to reduce the chance of fouling the chains. The Crab was designed for use at a flailing speed of one and a quarter miles per hour when the rotor required approximately 150 brake horsepower to drive it, the balance being available to move the tank. The rotor which was cylindrical was "dressed" with 43 chains attached to welded lugs, arranged in a spiral which, with the tank in first gear, gave a strike on the ground every four inches in both a forward and lateral direction, thus ensuring that the pressure plate of a Teller mine was certain to be struck. A dog clutch allowed, at will, power from the main shaft to be transmitted to a sprocket outside the tank from which a shaft ran alongside the jib to a bevel box which drove the rotor. The tank retained its normal armament less the lap Browning and some 20 rounds of 75mm ammunition which were displaced by the power take-off assembly.

The technique for flailing was developed under the direction of Major General Sir Percy Hobart, K.B.E., C.B., D.S.O., M.C., Commander 79th Armored Division, and was based on the "assault team," a combination of flails and engineer tanks, the former to clear lanes through mines, the latter to bridge obstacles. In order to provide sufficient room to handle the special bridges and fascines, and to allow tanks to pass each other, a 24-foot-wide lane was laid down as the minimum acceptable under service conditions. Three flail tanks working in echelon could provide this, allowing one foot overlap, but the standard of driving was necessarily very high. To provide for casualties a reserve of two tanks was considered necessary for each team, and this determined the size of a flail troop as five. Except in the seaborne assault when space in landing craft was all important, this troop was never split. Three flails echeloned to the right or left according to the direction of the wind, each one about 25 yards behind the other, moved at top speed to the edge of the mine field. The rotor driving gear was then engaged and the leading tank started to flail followed by the

*Commander Second British Armored Brigade in Italy.

other two. Reserve tanks in the troop remained at the entrance to the lane giving covering fire until called forward to replace a casualty.

Three flail troops formed a squadron and there were three squadrons in a regiment. This organization was based on an infantry battalion with two companies forward. Each company required a "mine free" lane through the field and one reserve lane was needed by the battalion in case one of the company lanes was blocked. A flail regiment could therefore provide the necessary lanes for a Brigade attacking with two infantry battalions forward, leaving one flail squadron in reserve to support the reserve battalion in the exploitation role. The reserve squadron together with any reserve tanks not actually flailing was used in the initial stages to provide covering fire. The slow flailing speed made the tanks an easy target and tank gunnery from the supporting tanks became of the greatest importance. Good range facilities were available in England and a very high standard of gunnery was reached which materially reduced casualties.

Battle With Dust

Station keeping while flailing was not easy. The impact of the chains on the ground threw up dust or mud which made visibility very difficult. This dust cloud did not however rise very high and the adoption of special cowls over the periscopes, water spray devices to clear the glasses, and special markers on high standards eventually overcame the difficulty. The dust was sucked into the interior of the tank through the normal cooling intakes but although this reduced visibility inside the tank it never affected the efficiency of the crews. To prevent the turret races being jammed by dust, which would render the traverse slow or inoperative a turret ring seal was produced. A canvas shield over the 75mm mantlet with openings for the main armament, the telescope and the .30 Browning was also provided to avoid clogging the elevating mechanism.

The detonation of a single Teller mine had curiously little effect inside the tank. It was possible to hear the explosion and the tank shuddered as a ship will when a depth charge goes off some considerable way from her. Under the turret lights the dust-laden air became more turbulent and the engine note rose as revolutions increased with the raising of the rotor by the blast of the mine—otherwise nothing, no shock, no discomfort, no shattering effect on crew or machine.

Outside, the effect of the mine was to raise the rotor in the air lifting the chains momentarily clear of the ground. The rotor assembly fell by force of gravity and the tank continued to flail.

Chains were a difficulty; originally these were hand forged and proved most satisfactory. Productive capacity available could not meet requirements and a flash welded chain proved a complete failure. Ultimately a pattern of roller link chain with a link and swivel to allow the striking end to turn was adopted and proved satisfactory. It is not possible to give any accurate figures for the chain damage per mine. One chain—that which hit the mine—always lost some of its length. Of the chains immediately adjacent any number up to four might be damaged, either twisted or with links blown off. A shortened chain brought the force of the explosion immediately below the rotor and rendered it more liable to damage. The known maximum number of single Tellers put up by a single Crab without redressing chains is 34. On service 15 to 16 were frequently detonated without casualties, but the rotor was usually torn by blast and often so bowed by the force of the explosion that it was necessary to change it. Double and triple Teller mines, buried one above the other were encountered; the double mine usually damaged the rotor and the triple Tellers usually destroyed the Crabs. In the later stages of the Canadian attack toward Wilhelmshaven depth charges and 11″ shells with pressure plates were encountered. The depth charge destroyed the flailing gear without harm to the crew, but the 11-inch shell set at an angle acted like a fougasse and killed both driver and co-driver and damaged the tank beyond use.

British Official Photo

The "Crab" at work. This is the latest development in flail tanks. Earlier such flails as "The Baron" mounted on a Matilda tank chassis was used.

The 30th Armored Brigade was entirely equipped with flails. XXII Dragoons and the Westminster Dragoons took part in the assault on Normandy in 1944. Due to limitations in the numbers of landing craft the normal troop organization was broken up. Either two or three tanks were loaded in each Landing Craft Tank, the balance being engineer tanks, flame throwers or bulldozers. Over 80 per cent of the required lanes were successfully made on Second Army front, through which other armor, infantry, vehicles and equipment of all kinds poured to hold the bridgehead.

Nine Squadrons

The First Lothian and Border Yeomanry landed a fortnight after D-Day, giving a total of nine squad-

rons—145 flails available to meet requirements. They proved effective against Teller and Riegal antitank mines, and against Schu mines which appeared in ever-increasing numbers. Practically every action where normal armor was used in the bridgehead involved the sweeping of lanes; and only the centralization of the equipment under 79th Armored Division made it possible to meet requirements. Squadrons were switched continually between Divisions and Corps to meet an ever-changing situation.

Flail tanks accompanied the Canadian Army in the breakout from Caen and the subsequent Falaise pocket action. Others moved with the Second British Army through Caumont and crossed the Seine with both armies. The assault on the Channel fortresses, Havre, Boulogne and Calais was made possible only by the use of flail tanks. Extensive mine belts covered all three towns but presented no real difficulty to the assault teams.

Mines were encountered again in some numbers on the South bank of the Scheldt where the swampy ground made flailing a difficult task; also round Nijmegen and on the Siegfried Line in the Reichswald Forest. Very few were met on the actual Rhine crossing where large numbers had been expected. It is difficult to ascertain the reason for this but it may well have been due to the lack of transport caused by Britain's Royal Air Force activities.

Flail squadrons from the 30th Armored Brigade worked with the Ninth U. S. Army on several occasions when they were confronted with mine fields, notably at the commencement of the offensive beyond the Roer which brought the Americans to the banks of the Rhine.

As the advance progressed into Germany some mines were encountered covering the biggest ports, but the numbers were never as great as had been expected.

So far the flail has proved the most satisfactory mine clearer yet devised. With the design used in France, 90 per cent safety under reasonable ground conditions with mines buried not more than four inches deep, could be guaranteed, and the safety factor was often higher than this. Further investigations may produce a new combination of rotor height and speed, coupled with a new chain design, which may make for greater efficiency.

Regiments of the 30th Armored Brigade in all detonated some 5,500 antitank mines from D-Day to VE-Day. This takes no account of the innumerable antipersonnel mines also destroyed. At the most conservative estimate this represents a very substantial saving on men's lives and material at a cost—thanks to good training and the efficiency of the crews—of relatively few lives.

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FLYING FOOT SOLDIERS

FOOT SOLDIERS may sprout wings in the event of another war if present day Army Ground Forces leaders have their way in the development of "flying armies."

And not only will troops be transported by air to the field of battle, their equipment including everything from a rifle up to a heavy tank will also wing its way through the sky at speeds estimated anywhere from 135 to 350 miles per hour.

These possibilities have already gone beyond the theory stage. The Airborne School at Fort Benning, Georgia, began on September 5, a course established by direction of Headquarters Army Ground Forces, to instruct ground force officers in the principles and techniques of the movement of troops, equipment and supplies by air. This course of 120 hours of classroom and field instruction will apply the principles of war to air transported troops, their employment in battle and the basic responsibilities of the air and ground units for the operation.

Ultimate goal of the program is aimed at making the entire army air transportable.

Air transport, according to the experts, is the key to speed, flexibility, multiple uses and elusiveness—all the necessary elements to a successful force in a modern war. Once armies become air transportable no longer will mud, blown out bridges and congested roads hold up the movement of a military unit. Aircraft will by-pass these obstacles that have given ground troops so much trouble in past wars.

There are two types of troops transported by air. First, there are the "airborne" units which are trained and equipped to enter combat by air and for making assault glider landings. These units include parachute and glider troops. In World War II such units were employed in Sicily, Normandy, France, Holland, Corregidor and others.

The second type is "air transported." These are normal ground troops with their equipment who can be transported by air and assigned a ground tactical role upon arrival at their destination. These troops do not parachute to the ground or ride in assault gliders. They are nothing more than ground troops transported by air.

Examples of this second type include the air transporting of the 11th Airborne Division from Okinawa to Japan. The Australian Seventh Division was air transported to the Markham Valley in New Guinea after the 503rd Infantry Parachute Regiment made the initial assault from the air.

The Markham Valley engagement is an excellent example of how "airborne" and "air transported" troops will be used together in any further wars. "Airborne" troops will parachute in to make the initial assault while "air transported" troops will follow to support and develop the operation.

There are, however, several drawbacks to air transporting troops at the present time. Such troops would be dependent upon weather for movement and on air superiority for protection and supply. The large Army Air Forces transport planes of today are extremely vulnerable because of their low speed and slight armament. These drawbacks are being studied and the increase in aircraft development is overcoming these hinderances by increasing firepower and mobility of transport planes.

At present the United States does not possess enough air power to make the entire army air transportable. But, the need for larger and better military transport planes has been recognized and an expanded program to develop planes of a sufficient size, quantity and range for a transportable army is under consideration. If the Army Air Forces is not limited too severely by a small budget the possibility of air transportable armies is a thing of the near future; perhaps within five or 10 years from now.

Let us look at the aircraft in existence today that can do the job of transporting troops.

The C-97 Stratocruiser will carry 20,000 pounds of equipment or 142 men thousands of miles.

The C-74 Douglas Globemaster is capable of carrying 125 men or 49,000 pounds of military equipment.

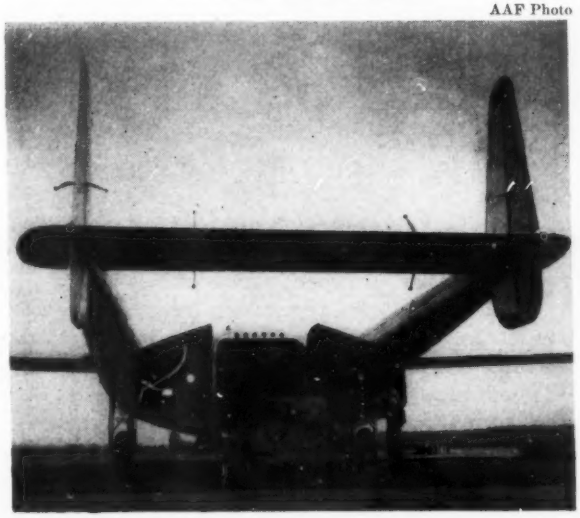
The Consolidated Vultee XC-99, which is being built at San Diego, is reported to be able to carry a 100,000-pound load for a distance of 1,500 miles.

The C-82, the Flying Boxcar, has a fuselage capable of carrying a two-and-a-half ton truck.

These aircraft and others that are still in the develop-

Here a light tank is being loaded into a "flying boxcar" —C-82. This aircraft has a fuselage large enough to carry a two-and-a-half ton truck.

AAF Photo



AAF Photo

An army truck backs up the ramp into the commodious fuselage of the C-97. This aircraft at present will carry 20,000 pounds of equipment or 142 men.

ment stage make "flying armies" almost a reality today.

The Army Ordnance Department has developed and manufactured a light airborne tank. Its official name is Tank, Light, T9E1 and it weighs 15,800 pounds. It has a maximum speed of 45 miles per hour and mounts a 37mm gun and one .30 caliber machine gun. This tank is a step toward making armored units air transportable.

It has been reported that the Army Ground Forces has projected plans for making all its weapons of a size and weight to be air transportable by breakdown in the present aircraft or transportable in whole in larger aircraft yet to be developed.

The goal is to transport infantry equipment fully assembled so that the troops can go into immediate action upon landing.

When all problems of transporting troops and equipment by air are solved it will be possible to send any standard infantry or armored division into action hundreds of miles away from their home base in a few hours.

Perhaps in future wars all invasions will be made from the air rather than from the sea as in World War II. It is certainly in the realm of possibility.

AAF Photo

Here is an inside shot of the spacious C-82. This airplane was developed near the end of the war.

"A general may then employ with the same success, for battles, the offensive or defensive system; but it is indispensable to this effect:

"1st. That, far from limiting himself to a passive defense, he should know how to pass from the defensive to the offensive when the moment has arrived;

"2d. That he should have a sure *coup d'oeil* and much calmness;

"3d. That he command troops upon whom he can count;

"4th. That in retaking the offensive he should not neglect to apply the general principles which would have presided over his order of battle, if he had commenced by being the aggressor;

"5th. That he direct his blows upon the decisive points."—JOMINI.

The Mules of Mars*

by 1st Lieutenant Dan L. Thrapp, 2MC

PART I

MOST people think a Quartermaster has about as much business in a combat outfit as a steer in a breeding corral, but the QMC is a diversified outfit and its members sometimes find themselves dodging articles other than the proverbial bale of hay.

You take mulemen, for instance. The Quartermaster officers and men in the pack troops, or those who handle jackasses for Infantry or other branches of the service, occasionally reach the fighting areas. Each arm and service ordinarily trains its own packers, but a man who has a specialist rating as a mule packer usually is received joyously by combat donkey organizations.

When the 475th Infantry Regiment, veteran of the battle for Myitkyina (GI pronunciation: Mish-i-naw), went into intensive training at Camp Landis on the upper Irrawaddy late in 1944, it seemed likely that another campaign was brewing. Burma is strictly a mule country. It followed, then, that a Quartermaster pack officer who wanted to see some action should volunteer, be accepted and assigned—officially as third battalion assistant S-4, unofficially as battalion animal transport officer. This because the T/O called for an unneeded supply man, but no pack officer.

The 475th, together with the 124th Cavalry (dismounted), two battalions of pack artillery, the 31st, 33d, 35th, 37th, 252d, and 253d Quartermaster Pack Troops, and a field hospital, became a long-range penetration outfit, the so-called Mars Task Force. And there were those two damned elephants someone at Regimental Headquarters picked up and brought along. A mule can get used to almost anything, but he draws the line at an animal that hangs down at both ends. Sensible, not knowing whether an elephant is coming or going, the mule is inclined to play safe and take off, regardless of load, underbrush, leader, column, or common courtesy.

Five weeks were not too long to train for a plunge into enemy occupied country, especially when many of the replacements were not primarily Infantrymen. The 475th seemed destined to do its fighting with green soldiers. The deplorable situation at the battle of Myitkyina was widely publicized at the time. After that engagement, during preparation for the Mars job, replacements received to bring the regiment to T/O strength were largely Quartermaster remount men, and the 475th again had to start almost from scratch.

It had this advantage, however: unlike the situation the previous spring, this time there was a strong nucleus of veterans to salt down its greener elements, and it had a few weeks in which to train its new men.

The 35th Pack Troop was assigned to the third battalion. Its animals had been taken off a Liberty ship sent to Ledo by train, and within seven days were hoofing it down the 300-mile road to Myitkyina. There was no time to complete shoeing them, and the result was that they arrived at Camp Landis in very bad condition. An extra week at Ledo putting at least front shoes on the mules would have saved innumerable headaches for us later on.

Every effort was made to get enough animals in shape in time to get the battalion on the road. Saddles must be fitted—an important factor in mule operations, of which more later—and gun and ammunition hangars located, made, stolen, or secured on requisition. Sick mules needed doctoring, and all of them must be shod or re-shod.

A big job was to assign mules to a permanent task. Success of the mission would depend to some degree on how accurately we judged the capacities of each animal and how well each mule was "classified."

For example, there was no need to assign a stocky, solid, well-gaited mule to hauling grain, when gun and ammunition mules were needed. A pack troop is authorized nearly 300 animals, while the personnel totals about 75. Pack troopers are mounted on mules and herd their loaded animals, normally by platoons. That is the most efficient manner of working pack animals, because the mule can pick his own way and, to some extent, his gait; he can make things easy for himself. That method of operation is best for situations where packers must move supplies a comparatively short distance and do not have to operate with foot troops in the same column.

Naturally, when pack mules become part of a moving column, this system is impractical. The herd of mules, moving some five to six miles an hour, would constantly overrun the foot soldier, and doughs don't like that. On the other hand, the animals cannot be started out before the foot troops because there is the question of security for the animals, and there is also the quite important factor that the foot troops want their machine guns, ammunition, and mortars along with them, just in case. The same objections hold regarding advisa-

*The Quartermaster Review.

bility of running the mules up to the foot soldiers later in the day. A mule, like a man, is most efficient if he can be worked from dawn to noon or about 1300, rather than from, say, 1000 till 1700.

Mulemen have a great deal to do when camp is made, and their most important task is to take care of their animals and to graze them. Just as man cannot live on bread alone, so a mule won't go far on just grain. Or very far without it, either. The point is that bivouac should be established early enough in the day so that the animals can get their two hours or more grazing and can be properly rubbed down and picketed for the night.

For these and other reasons it was necessary to take the mules along with the column, and so each animal had to be led by a man on foot. Thus, the pack troop retained about seventy-two mules, one to be led by each man, and the other animals—some 220 of them—were turned over to the battalion, where they were divided, forty-two to each rifle company and the remainder to headquarters company and battalion headquarters.

Rifle companies assigned ten animals to headquarters and weapons sections and divided the rest among the rifle platoons. Headquarters company used about forty-five mules in the heavy weapons platoon, and split the rest among transportation, communication, pioneer and demolition, and intelligence and reconnaissance platoons. The medics needed some animals, and besides, twelve saddle mules were taken along, ten of them for casualty evacuation.

In the heavy weapons platoon, four mules were assigned each heavy machine gun and four each mortar—one in each instance to carry the weapon, the other three to pack ammunition. Additionally, four mules were to carry piecemeal a short-barreled pack 37mm., by means of which we hoped to spray Jap-bearing jungles with canister; other animals carried bazookas with ammunition, and incidentals. The set-up in the rifle companies roughly paralleled this, except that they were authorized light for heavy machine guns, and had but one 81mm. mortar, filling out with 60mm. weapons.

Mule packers of the 124th Cavalry Regiment and their animals push across a pontoon bridge in rugged Burma.
Signal Corps Photo

The Quartermasters have been using mules since the Corps was first organized. George Washington is rumored to have introduced the long-eared horse-donkey hybrid to this country by the progeny of some jacks he purchased in Spain, and some mules reputedly were used by both armies during the Revolution. As a result of almost two centuries of experience, the QMC has determined a lot of things about the animals.

A mule can carry about one third of his weight. The Army cargo packsaddle, with trappings, weighs in the neighborhood of 100 pounds, and the average mule we worked would weigh from 1,000 to 1,200 pounds. Stouter mules are kept for the artillery, which has the heaviest, most awkward loads.

Thus, you can figure that a mule payload should not go much over 200 pounds. For a long campaign, such as ours, we tried to keep each burden down to 180 pounds, and succeeded pretty well on the whole.

Our heaviest loads normally would be machine-gun ammunition, one animal's share consisting of ten 21-pound cans, for a total of 210 pounds. The load, however, was evenly balanced—most important factor in animal packing—and so was not too much.

In the weeks of training marches and preparation we worked out these and other problems. Supply was not up to zone of the interior standards in Burma in 1944, and we could not count on receiving what we requisitioned, so we had to make provision to acquire necessary items by means other than orthodox.

We gradually acquired enough of most items, although some of the equipment was not in good repair and there were no facilities at Myitkyina for renovating it. We made some hangars and improvised others, acquired a set of horseshoeing tools and saddler's equipment, and cut the customary pack-troop equipment to the bone. For instance we took along no picket lines, because we couldn't spare the animals to carry them, and successfully employed lash ropes instead; we took no rigging covers; we drastically reduced the number of mantas—canvas used to wrap individual loads—needed. Each animal carried a spare set of pre-fitted horseshoes and we divided up spare halters, shanks, breeching, etc., to avoid making special loads of these things.

Our worst headache was the mules. They had scarcely rested from their 300-mile jaunt down the Ledo Road, and were about to take off on an equally long journey, this time over no road at all. We had no veterinary officer with the battalion at the start, but depended upon the services of a bunch of fine vet technicians who perhaps did more than anyone else to get the show on the road.

At that we took thirty mules out of the sick corral and eight out of the hospital the morning we crossed

the IP. We were proud of the fact that until we struck our first combat, one month and 150 miles later at Tonkwa, we had lost but two animals, one through heat exhaustion and the other from an unknown cause. The rest of the animals were in better shape then they were the morning we left Myitkyina.

The first stage of the campaign—the journey to Tonkwa—was in the nature of a shakedown cruise.

Brigadier (later Major) General Merrill, leader of the famed Burma Marauders, has been quoted as making the classic definition of the troubles of the leader who handles both men and mules. After the Marauder campaign from Ledo to Myitkyina. Merrill said:

"Next time give me mule skinners instead of doughboys, for it is easier to make doughboys out of mule skinners than mule skinners out of doughboys."

The general spoke from experience. There are tricks to leading mules, just as there are to anything else, and it sometimes seemed that we might have better luck if the animals had led the men. The average mule is one of the most intelligent, and certainly one of the most sure-footed, animals in the world. He can see a trail where a man can see nothing but rock. If left to his own devices he will never stumble, rarely slip or bog himself down, and almost never hurt himself. When, however, he is led by a man he can perhaps get into more trouble than any other creature on the face of the globe, and although his difficulty is directly attributable to his inexperienced leader, the animal gets the blame. We occasionally lost animals over the sides of mountains, in rivers or bogs, but we would have lost not a single one had they been free to choose their own way.

We crossed the Irrawaddy on an eight-mule ferry the second day of the campaign. Because of the danger that an animal might fall off the ferry, we unpacked them and repacked on the other side of the stream. The Irrawaddy is a swift-flowing river, wide, deep, muddy and cold, but the entire battalion crossed in less than a day. By reaching the other side before noon we had a good opportunity to graze the animals, and since they were on the wrong side of the river, there was no danger that they would suddenly recall the delights of their old Camp Landis stamping ground and take off. We found an enclosed paddy grown to grass and turned the animals loose, herding them on foot. We had no bell mares, of course, and from this time forward, herded the mules afoot when we grazed them, if the situation permitted. It proved impractical to send leaders out with their individual animals to graze them. The temptation to tie the mule to a tree and catch up on mattress nomenclature proved too strong for some.

On one occasion we tried tethering the animals to individual trees, using 30-foot lair ropes and leaving a couple of men on guard to untangle them, but a couple of serious rope burns convinced even the laziest that that wasn't a good idea. Rope burns perhaps cause more injuries to horses and mules than any other single thing, and it required constant vigilance to keep picket lines tight and halter shanks tied short enough to prevent the animals getting ropes twisted around their feet.

Sometimes when we bivouacked in the jungle or heavy forest it was impossible to find grassy spots for pasture. We cut either banana or bamboo leaves for the animals in that case. They liked the bamboo best and it was better for them, because the banana leaves have more water content than roughage.

We carried three days'—sometimes four days'—rations with us. Each donkey normally carried one day's grain in addition to his regular pack, and transportation mules in the headquarters sections carried grain in bulk to make up the other two days' supply. Each mule was allotted ten pounds of grain a day and the usual mixture included barley, peas or beans, and salt. The men carried three days' K or C rations, and one day's D ration, or at least they were issued those rations and carried that part of them they wanted or thought they could use.

A major task was to make the men carry their own load and not slip it onto the mules. By some quirk of T/O reasoning, mule leaders were authorized Garands rather than the light, less awkward carbines they should have carried. In addition, each man was required to carry a pack containing his bedding, rations, and other personal paraphernalia, and at times the temptation was considerable to slip the rifle onto the mule and put a few rations into the morning manta of organizational equipment. Some mules gradually developed into poor leaders and habitually hung back on the lead rope. The boys, carrying heavy packs plus heavy rifles plus steel helmets (most of which soon got "lost"), and dragging, all day long, a 1,200-pound mule, were mightily tempted to abandon what religion they possessed, and lurid language developed like a fog around the more obstinate of the animals. Riflemen had it comparatively soft during most of the campaign. When the bivouac area was reached, they had merely to look out for themselves and take the usual security precautions. The mule handlers, on the other hand, had barely begun their day's work. The argument, of course, was advanced that the riflemen were more exposed to danger from the enemy than the mule skinners, but that point was debatable. In addition, the sweetest-tempered mule knows how to kick, and is glad to do it, and for weeks we had more casualties from mules than from Japs.

We were supplied by air-drop every three or four days. C-47s and C-46s droned in by the dozen over a previously selected and marked drop field and parachuted rations and ammunition and requisitioned items to us, then free-dropped grain. Occasionally a plane load of grain would get mixed up with parachuted loads and we had some casualties and a couple of deaths from that cause. An 80-pound sack of grain gathering momentum through a thousand feet of space can hit a man pretty fast and pretty hard.

Once, near a place called Mong Hkok, the only available spot for a drop field was in a narrow valley with surrounding hills so high that planes could not get a

good shot at the field. A "stick" of grain sacks thudded across a series of picket lines and wrecked the battalion aid station, killing a Chinese soldier standing near by. Another time one of the best packers in my platoon was loading a mule while rations were being parachuted down on the field. A grain plane came in unexpectedly and free-dropped a dozen sacks, one of them hitting the packer. He was carrying a carbine across his back and the sack hit him on the shoulder, snapping the weapon into three pieces. The packer was evacuated with what the medics feared was a broken neck, but fortunately they were mistaken and he recovered.

The march south to our first combat was mostly over level country, the greatest difficulty being occasional bogs or river crossings.

The second battalion lost a couple of mules during a moonlight river crossing. Again a ferry had been provided, but the mules were not unpacked and two of them fell off the raft, their loads spinning them belly up and causing them to drown.

No climbing was required during this first stage—nothing but a dogged plodding through dust and heat. Yet this was a difficult period for the animals. The column walked at the pace of infantry. The average rate was just a little over two miles each forty-five minutes, followed by a fifteen-minute break. We took advantage of every halt to let the animals graze, and encouraged the men to turn them loose during this period even if it meant a short search when the column got under way again. After the first few days we ceased taking time out for the noon meal, but nevertheless we marched at the rate of foot soldiery, and the animals, even on a short hike, had to be loaded well into the heat of the day. This cut down on the grazing time we could give them and tired them extravagantly, since they could not be unpacked during the quarter-hour rest periods and thus derived no benefit from them.

On halts of twenty minutes or more we did unpack the mules, but often we did not know how long a halt was to be, since it usually came as a result of someone fouling up ahead somewhere and we had no contact with the head of the column except for urgent matters.

We skirted besieged Bhamo close enough to hear Chinese-manned .30-caliber heavies talking to Nambus, and went on south to Sikaw and beyond. It was somewhere along in here that I established the Burma 300-yard foot record. I was attempting to coax a skittish mule past an elephant at the time. Everything would have been okay, had the pachyderm not decided to tickle the mule on the business end with his trunk. The mule took off, and since I was on the other end of his halter shank, I took off, too.

The second battalion was committed at Tonkwa, and I Company from the third battalion, and part of the heavy weapons platoon of headquarters company, were assigned the task of cleaning out a patch of woods. Mule packers from the transportation platoon and others were employed to pack ammunition and supplies to both the second battalion and the elements of the third engaging the Japanese. Most of the work was short hauls, occasionally under inaccurate sniper fire. We suffered no casualties from this fire.

Our bivouac area was some two miles back of the second battalion's front positions. The Japanese had four field guns we called 77mm., although they actually were 75mm., chambered slightly larger than our 75s so they could use our ammunition and we could not use theirs.

They had excellently camouflaged positions for their guns, and in the morning and again in the evening would loose a salvo or two, then move their pieces. They were zeroed in on our bivouac area at a river crossing, and their fire caused us some casualties in men and animals. One tree burst accounted for seven animals. Another shell cut between two mules tied to a picket line and burst about eight feet behind them, but injured neither.

After a couple of days' fighting, the Japanese abandoned the Tonkwa sector and our units moved up about four miles across an immense paddy, now grown to grass, and into a wood, where they bivouacked near some abandoned enemy positions. Mules were used once or twice to pack supplies into the advanced positions, but otherwise were kept back well out of possible artillery range. Mules are difficult to replace under Burmese combat conditions. Patrol activity established that the Japanese had at least temporarily given up all the territory north of the Schweli River loop, although their patrols crisscrossed the area, as did ours. They supplied their patrols by means of pack elephants or little pack ponies or diminutive mules, using the typical Chinese wooden packsaddle. Chinese troops captured some of the little ponies, about the size of Shetlands, and did a brisk business trading them to GIs for cigarettes, flashlights, or other items they could later convert to cash in China.

Eventually, however, the brass arrived and, distressed by the unorthodox-looking "toy" animals in the outfit, decreed that the ponies were apt to spread disease among our mules and ordered their abandonment. This despite the fact that throughout the campaign our Kachin scouts used the same animals in our column, grazing and feeding and packing them alongside our mules, with no disastrous effects.

Even during a campaign one can get a little time off, and on Christmas Eve we spent the day hunting. Flocks of pea fowl were common, and they tasted just like turkey; a couple of the huge, 40-inch-long Burma black squirrels were good; and one of the boys even shot, cooked, and ate a tremendous hornbill, which looked more like a buzzard than anything I ever before saw in a cooking pot.

The Chinese came back to relieve us shortly after Christmas, and by New Year's Eve the entire regiment had turned east and plunged into the mountains toward the Burma Road.

(To be concluded)

Japanese Animals In Siam*

by Lieutenant Colonel C. R. D. Gray

AFTER the defeat of Japan one of the problems in the South East Asia Command was the disposal of the Japanese Army animals known to be scattered all over the countries in which Japanese forces had been operating. In principle, it was ruled that (1) no animals would be backloaded to India because of the danger of spreading *Epizootic lymphangitis,* and because India already had a surplus of Army animals; and (2) all animals fit for further work would be held and disposed of in the best interests of the countries concerned, through Remount channels, in conjunction with the local civil authorities.

In Burma, Malaya and French Indo-China, non-belligerent countries overrun by the Japanese, the problem was one of tracing the animals, and returning them to their former owners, or distributing them to civil authorities, without payment, for the rehabilitation of the country. Siam, however, had been an ally of Japan, and all animals found in that country were treated as enemy property, and therefore booty. No mutual aid agreement between Siam and Britain was then in existence, so it was ruled that such animals were to be sold, proceeds being credited to H. M. Government.

The Japanese submitted to us a list of their known animal locations in Siam, but it promised inaccuracy, as a footnote stated simply: "This list being made by tracing memories of investigated members, by the lack of data concerning we regret to say this list not exactly correct."

At the time of our arrival in September, 1945 the railway system had been thoroughly disorganized by the R.A.F., and the few roads were in a very bad state. We began inspections of the Japanese animals, but it took some time owing to these bad communications. Transport was extremely limited; only a few Jeeps had been flown in.

Our first inspection was at Bangkok, where the Japs had 510 animals; all were in poor condition, many being in an appalling state. A few were lying down quite unable to rise, while many had festering and flyblown sores on withers and ribs. Almost all had overgrown feet, dropped soles, and signs of thrush. Over two-thirds were selected for immediate destruction. The disposal of such a large number of dead horses was in itself a problem in the monsoon conditions as the water level was only two feet below ground, but it was solved by digging deep pits on the top of a rifle-range butt. The animals were led up on it, shot, and pushed over—an unpleasant experience.

The Japs had rudimentary ideas on animal management, but owing to the terrible climatic conditions, indifference of their officers, and lack of "horse-knowledge" among all ranks, animals were pitifully looked after. Horses, to them, were merely another method of transport, and suffered the same ill treatment as Jap cars and trucks. They were kept on undrained standings with no bedding. Tight headropes were common, and no grooming was ever done, although boxes of unused brushes and curry combs were found later in the men's barracks. Manes and tails were long and matted. Veterinary attention was skimped, and seemed to consist only in the application of mercurochrome to all sores and cuts; yet there were ample stocks of veterinary equipment all packed in beautifully fitted field chests.

Farriery equipment was excellent, a set consisting of two neat Yakdans fitted with full tools, an anvil and a built-in centrifugal blower. The shoeing, however, was bad, all the usual faults being common, *i.e.*, bad dumping, cutting away of heels and frog, high unnecessary nail holes, and rasping of the outer hoof walls.

The Jap soldiers showed several instances of being fond of their charges, but in curious ways. They could sometimes be seen squatting in front of a horse, hand-feeding it with offers of green grass, yet at the same time they seemed to ignore a cut mouth or a weeping eye. They gave their animals no bedding, but there was

The best horse found in Siam. This animal had great scope and jumped very well.

*Journal of the United Service Institution of India.

an issue of sun-hats for the horses—large discs of canvas-backed matting with ear holes and a throatlash. As a final instance—when the animals were destroyed many Japs stood at attention and saluted as the horse went down and some wept.

Jap soldiers were educated, and N.C.Os in particular were fond of paper work. They all carried satchels, buckled to their belts, in which were notebooks, writing paper, colored pencils, and often a Jap-English dictionary. In consequence elaborately written feeding charts, notices as to hours of parade, and rules for work and behavior were much in evidence. These were pinned up prominently in every *basha* and living quarter. Army orders were painted (usually with colored chalks) in meticulous picture-writing on blackboards.

This efficiency was carried to extremes. If, for instance, they were asked to say how much fodder was left, they would prepare an elaborate statement in English copperplate writing, showing amounts issued, consumed and required by day, week and month for one horse, all totals being shown in English measure, though their own system is metric. A N.C.O. would sit up all night to do this, and would present it next morning with much bowing and hissing. This hissing is really a quick intake of breath and is an automatic expression of humility and respect by an inferior before talking to or taking leave from a superior.

General discipline was so good that it was almost alarming. All orders were obeyed with a snap and on the run. Saluting was immediate and on sight—though the officer might be 200 yards away. A man carrying a load would drop it, salute, then pick it up again—or if without a hat, would bow deeply despite his burden, then proceed.

In Bangkok advantage was taken of this discipline and willingness to work by showing the Japs our standards of horse-mastership and stable management. Once they saw what was required of them they worked with a will. They were organized into a unit of two troops of four sections each, under their own officers, 45 men in all, and were taught stable routine for grooming, feeding, etc. They called themselves the "Horseguard Corps."

One indifferent interpreter was available at intervals, so most of the work had to be demonstrated by example. After a British Remount officer had groomed a horse in front of them they soon "caught on" and vied with each other in producing a shine on their horses. It was amusing to hear later that there had been much comment about this in their barracks, as it was inconceivable for a Japanese officer to instruct by personal example, let alone touch a horse to clean it.

Most of the Jap animals in Bangkok were pony stallions, and as the prisoners were required for dock labor, and only 45 men could be spared for Remount work, it became difficult to look after the captured animals in their standings, so it was decided to build paddocks for them. These were laid out on the usual Remount "kraal" system and were built without R.E. stores or assistance.

Timber, wire, roofing, etc., were "scrounged" from old bunkers, pillboxes, and disused huts, and a design was drawn by a Remount officer from which the Jap N.C.O.s produced their usual overelaborate plans with scales, distances, etc., all beautifully drawn in colored inks. The work was well done, and soon this unit had built a small depot, complete with six paddocks, a stable of 20 looseboxes, saddle room, office and grain store. A riding track, small school and a set of jumps were added later.

Inspections similar to that carried out at Bangkok were made at other Jap camps throughout Siam by Remount and Veterinary officers. Altogether 5,227 animals were inspected, of which 3,691 were destroyed, 1,536 being retained for disposal. Thus 70 per cent were destroyed, and 30 per cent retained.

Many varied types of animals were found in the Jap Army in Siam chiefly owing to the fact that they had received no reinforcements from Japan, and had made up deficiencies by capture or purchase. They were able to show receipts of all purchases from the Siamese. Here are some of the animals we found:

Japanese Horses.—These were bred in Japan from mixed Jap blood. About half were rides over 15 hands, used by Jap officers and N.C.Os. The remainder were transport horses of Percheron and heavy Waler stamp, and were used in high-wheeled single draught carts or in pair wagons. About 80 per cent were chestnuts; no greys at all were found.

The riding horses were only half-schooled as judged by our standards—with little flexion and rough paces. They were, however, all very quiet to mount and ride, and could be grazed at liberty and caught up at will. The Japs used them merely as a means of transport to march from A to B, and never attempted jumping or school work. In the course of selecting rides for British officers, a Remount officer rode 150 of these horses and found them all very quiet—a particular feature being the way they stood quite motionless when mounted, without being held.

Chinese Ponies.—These were of two types: (*a*) North China (Manchurian) shapeless animals about 13.3 hands, with a long, curly coat, roach back, good bone and uncertain temper; they were used entirely for pack work, and (*b*) South China—a lighter type used for pack work and riding—rather like Kashmiri ponies, but with heavier heads and thick coats.

French Indo-China Ponies.—A light narrow pony, about 12 hands, the same stock as Siamese, but showing a trace of European blood. Many skewbalds, piebalds and duns, but few true colors. A useless type of pony; very excitable and perpetually kicking and screaming, possibly because they were all stallions.

Java and Sumatra Ponies.—These were a mixed bag, some being captures from the Dutch Army, and some obtained from the villages. A light pony about 13 hands, with a breedy head but rather leggy, with cow hocks.

Could be easily recognized as all had prominently split or nicked ears. As rides they were fast, but also nervous and difficult to handle.

Siamese Ponies.—The smallest ponies seen. Known as midgets in Siam, they average 11.2 hands. The Japs used them in small, single draught carts, or as light pack ponies, for bedding rolls, etc. The best were like miniature New Forest ponies; they were extremely hardy, were fed only on grass, and had a very fast pacing trot when ridden.

Burmese Ponies.—A few only were found, brought back during the Jap retreat. They were a light type of 13.3 hands, and were probably captured from Burma Police or Frontier Force.

Indian Ponies.—Two were found, both bearing the "Mona" brand. They were in poor condition, and were destroyed.

Mules.—A mixed bag. A few Indian mules were found, but the majority were Chinese of a poor EI or EII type. Of all the mules found, very few would have been acceptable by our standards.

Japanese Saddlery

Saddles made in Japan were very similar to the British Officers' pattern issue saddle, but had neat detachable panels, which obviated re-stuffing, provided the new panels were available. They had prominent knee-rolls, and were only comfortable if ridden with long leathers. Briddles had a civilian-type curb and bridoon bit, with "rising-sun" brass bosses. Head collars were of string and webbing, worn under the bridle.

A. T. Packsaddles were similar to ours, but had adjustable arches and shaped sidebars. The Japs said that this saddle caused few galls, and that the majority of injuries come from the Chinese "X" pattern packsaddles of rough wood, which they had been forced to use of necessity. A. T. Carts were single draught. Those made in Japan were good, with pressed steel wheels and turned shafts. The larger ones had platform bodies only, not with side rails, as on our A. T. Carts. Many, however, were Chinese carts, with wooden wheels and axles.

The Japanese 37th Division was at Nakon Nayok, a hundred miles north of Bangkok, and it was here that out of 2,699 horses seen, 2,154 had to be destroyed. It was such a large proportion that we investigated the reasons, which were:

(1) This formation had marched by road the whole way from North China to Siam, a distance of 3,500 kilometers;

(2) It was at Shia-Chia-Chaong, S.W. of Peiping, when it received orders to march south to link up with the Southern Forces' drive on the American Airfields in South China;

(3) It covered the distance in four months, averaging 30 kilometers (20 miles) a day, marching six days a week.

(4) *En route* it fought two battles near Changsha, and it was this force that recaptured Kweilin. Moving south it crossed the top of French Indo-China at Vientiane, and from there went through Siam to Bangkok.

Animal casualties in this Division were heavy. Killed in battle numbered 220, died 700, drowned 10, destroyed as unfit 150. These 1,080 animals were replaced by captured Chinese and French Indo-China ponies, no reinforcements being received from Japan. South of Hankow no Army fodder supplies were forthcoming, and all grain and grass had to be obtained locally.

The Japanese stated that owing to the speed of the advance and the tiredness of the troops, the horses seldom got more than two feeds a day. Of the ponies they acquired, the Manchurian type stood up best. On our inspection they were the least emaciated, and had less galls than other types.

While resting at Bangkok, this Division received orders to move south to selected points on the West Coast of Malaya, but the war ended before the move started. Later, when examining their maps, a British Officer who had recently been on the S.E.A.C. Planning Staff, said that their marked destination was to have been the main landing area for our attack had it taken place. We repeated this to the Jap officers, and they showed very great relief—and amusement.

The Jap 15th and 33rd Divisions were at Nakom Patom, sixty miles west of Bangkok. These divisions had borne the worst of the Burma campaign, and were in very poor shape when they got back to Siam. The remnants were magnificent troops, and their discipline was high, even by Jap standards.

Their animals had had a bad time, and their records showed that they lost 5,000 on the retreat from Kohima, mainly from hunger. They ran out of food stocks, and as a result their animals died like flies, all along the escape route. The senior Jap Veterinary Officer said that only five horses returned from the original number at the beginning of the campaign. He also said that the best animals they had were the mules they had captured from the British forces.

A survey of the animal requirements of the Siamese showed that riding horses were required in Bangkok by the Siamese Army for remounting their 1st Cavalry regiment, that small ponies were wanted in the up-country districts, and that a few small ponies were required by the Pasteur Institute for serum manufacture (anti-snake bite). Sales by auction and private treaty were arranged, and two hundred riding horses, and 958 pack ponies and mules were sold.

In addition to the above animals, the Japanese had a few Army dogs, three of which were captured. They were good Alsatians, bred in Japan, and were used for guard duties, being trained to attack any man indicated by their handlers. They were sold by auction and fetched high prices.

Army Will Continue to Encourage Horse Breeding

THE Army will continue to encourage the breeding of horses, according to Colonel Fred L. Hamilton, Chief of the Remount Branch, Office of the Quartermaster General, who says the answer lies chiefly in the benefits which accrue to the civilian horse raisers and users of the nation who have demanded that the horse breeding program, in operation for the last 25 years, be continued by the Government to assure the present high standard of both draft and light breed animals.

Recently Congress appropriated $150,000 to continue the program for the fiscal year ending 1947 under the jurisdiction of The Quartermaster General.

When, during the reorganization of the War Department back to a peacetime basis, the existence of the breeding program was threatened with extinction, horse breeders of nearly all States, who are benefited by the availability of the Army owned breeding stock for the improvement of their own stock, mailed thousands of letters to Congress in protest against the abandonment of the program.

According to Colonel Hamilton, the civilian breeders claimed the following benefits: Fine breed Army stallions are available at widely distributed points throughout the country at fixed and extremely reasonable stud fees; breeders find it possible to instil good blood into their stock, developing horses with better endurance and vitality, and capable of better performance; that since initiation of the breeding plan, more than 200,000 foals have been reported to have been sired by fine-bred Army Remount Stallions, thereby definitely improving the national standards of civilian owned stock.

Based on the Army purchase price, a conservative estimate places the salable value of these colts at least $100.00 over the normal selling price of common stock and this, according to Colonel Hamilton, represents an increase in value of something over $20,000,000.

These and other benefits have accrued to the financial advantage of the horse breeders of the nation in general and fear of discontinuance of the program resulted in a deluge of mail to members in Congress when its appeared that the Remount Breeding Program would be abandoned.

Over the period of years between 1921 and the present, the Quartermaster Remount Service has increased its holdings of stallions from 165 to over 700, by purchases, donations, and the breeding activities at the various Remount Depots where bands of good brood mares are maintained. This number has recently been augmented by the acquisition of some of the finest horses in Europe, acquired as "war booty" from Axis countries. Early in August about 100 fine bred horses arrived in the United States from Bremerhaven, Germany. This means, as a result of victory, acquisition has been made of about 250 of the world's best stallions and brood mares, which include Thoroughbreds, Half-Breds, Arabs, Arab-Kinds and Lippizanners.

At the present time the Remount Branch has more than 500 stallions standing throughout the United States, but it does very little breeding on its own. The stallions are farmed out to agents throughout the country, located principally in horse breeding sections, who may charge not more than a $10.00 stud fee for breeding to mares belonging to others.

The trend toward mechanization of warfare is reflected in a comparison of horse purchases for World War I and World War II. In contrast to the 486,000 horses and mules purchased for World War I, The Quartermaster General Remount Service procured 57,242 for World War II, 55 per cent of which were draft horses and pack mules. The balance were riding horses, a number of which were provided for the Coast Guard Beach Patrols, the training and operation of which were supervised by the Remount Service.

In spite of mechanization, however, pack mules were used to great advantage in the mountainous terrain in Italy, and, although all the reports of World War II have not been completely evaluated, there is ample evidence that in China, Burma, and the South Pacific, animals played an important part in the successful supply of combat troops.

Because of 25 years of good breeding practice and the acquisition of fine stock from other countries, the Quartermaster Remount Service at the present time has one of the finest bands of brood mares in the world and some of the best of the world's stallions standing throughout the country which are available to civilian horse breeders.

The six Remount Purchasing and Breeding Areas distributed to cover the entire United States are:

The Eastern Remount Area, with headquarters at Front Royal, Virginia.

The Central Remount Area, with headquarters at Lexington, Kentucky.

The Northwestern Remount Area, with headquarters at Sheridan, Wyoming.

The West Central Remount Area, with headquarters at Colorado Springs, Colorado.

The Southwestern Remount Area is governed from San Angelo, Texas.

The Western Remount Area has its headquarters at Pomona, California.

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Ten thousand horselovers watch the show at Front Royal, Virginia. Some of the world's finest horses are maintained at this Remount Station.

★ ★ ★

Equine Reparations*

by Lieutenant Colonel Gordon W. Cook, 2.M.C.

DURING April 1945 General George S. Patton's Third Army, in its fast sweep across Germany, captured several German Government and German Army horse-breeding farms, and with them several thousand valuable horses. For twenty-five years the United States Army Remount Service has been attempting to improve the breed of riding horses in the United States through a system of placing good stallions with civilian agents throughout the country. When these two seemingly unrelated facts jelled in the mind of Colonel Fred L. Hamilton, Chief, Remount Branch, Field Service Division, Office of The Quartermaster General, this story had its beginning.

During early August, 1945, General Patton returned on temporary duty to Washington, and Colonel Hamilton had a long talk with him about the horse situation in Germany and Europe as a whole. He found that much valuable bloodstock had been captured by the Third Army and was being held in various German Government and German Army horse-breeding farms in the American Occupation Zone. War Department orders were issued directing Colonel Hamilton to proceed to the American Zone of Occupation to select and return to the United States such bloodstock as he felt would be of value in the Army Horse-breeding Program.

In order to appreciate the heritage of the horses which were brought from Germany it might be well to consider briefly the general history of Europe—a long story of conflict and of migrations and transmigrations of whole peoples, in all of which the horse played a major part. The Roman warriors in their chariots roamed the Roman Empire, of which Southern and Central Europe were a part. It is natural to assume that there was a certain amount of fraternization—equine as well as human. In the 9th and 10th Centuries the Magyars came out of Central Asia on horseback, overran Central Europe, and finally settled down in Hungary. Such a march would certainly eliminate the unfit, and the horses that arrived in Europe must have been really rugged. The Magyars were followed by Genghis Khan and his Mongols, and the whole thing was repeated. Then came the Turcanians, who by the 13th Century had overrun all Asia Minor and had secured a foothold in Southern Europe. As late as the end of the 17th Century the Turks were laying siege to Vienna, mounted on horses from Arabia, Syria, and Persia.

From the tested and proven war horses of the ages the Europeans have developed some remarkable light horse breeds. Numerous conflicts and changes of boundaries in more modern times have resulted in an almost continuous blending and amalgamation of this original horse blood. The Europeans, from choice and neces-

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sity, take their horse business very seriously, and through thorough and careful selection they have developed breeds of specific types and for specific needs.

Our own story in America is quite different. The horse is not a native. Our foundation stock consists primarily of inbred wild bands descended from a few horses left by the early Spaniards and the horses brought over by the early colonists. While we have continuously imported heavy draft horses and an occasional English thoroughbred, we have had no great influx of foundation stock. As a result, our Remount Service in the meager twenty-five years of its existence, has been forced to resort to the violent crossing of a heterogeneous lot of horses. We have, therefore, not developed a type that will breed true, and, with our present stock, it would have been a long time before we did. You can't beat the laws of Mendel.

Colonel Hamilton proceeded to Berlin where he conferred with Lt. Gen. Lucius Clay, Deputy Military Governor of the American Sector, and discussed the entire matter with him. Colonel Hamilton then proceeded to the German Government thoroughbred breeding farm at Altefeld. The German Government established Altefeld in 1934, and immediately set out to accumulate superior foundation stock there. The war gave them almost unlimited opportunity in this respect. They assembled here the stallions Phalaris, Brantome, Bubbles, Antonym, Oleander, and Flamboyant, and a band of superior mares from all over continental Europe. The Germans established here not only the best possible foundation bloodstock but their best horsemen as well. Captain Falk, the veterinarian, had been in charge of the breeding at Altefeld for ten years. This breeding farm had been kept intact throughout the war, and in September 1945 it was still a well-run farm with most of its original complement of personnel.

Colonel Hamilton then visited Monsbach and Donnauworth, where the German Army had been carrying on a breeding program for many years. Here were established not only some of the best German stock but also some bloodstock captured in Poland, and many of the horses from the Hungarian State Stud at Babolna, which was established in 1789 by the Emperor Joseph II of Austria. As the Russians pressed into Hungary, the Germans evacuated the Babolna Stud to Germany proper.

After more than a month of looking at horses and selecting the better bloodstock for return to the United States, Colonel Hamilton completed arrangements for the shipment of 152 horses, consisting of sixty-four Thoroughbreds, forty half-breds, twenty-three Arabs, fifteen Arab Kinds, nine Lippizzaners, and one Russian horse.

The horses fall into two categories: First, those which were captured from the Axis armies and, as such, are legitimate prizes of war, in accordance with the Rules of Land Warfare and the Hague and Geneva Covenants. (In this connection it is interesting to note that one of the foundation sires of the great English Thoroughbred was Byerly Turk, captured by the British Captain Byerly in the Turkish war mentioned earlier in this story.) Second, those which were requisitioned by our occupation forces from the German Government and/or from private German breeders. Those horses which we requisitioned were appraised and accepted for subsequent inter-Allied reparation settlements in accordance with the Potsdam Agreement.

After days of tedious rail shipments to the Port of Bremerhaven, the horses were loaded on a lightly ballasted Liberty ship, and for twenty-one days they battled one of the worst storms of the North Atlantic. On one occasion several of the horses were thrown completely out of their stalls and out on the deck in a heap. Naturally they were a pretty sad sight when they arrived. That none were lost or permanently injured is a real tribute to the horsemanship of the six officers and seventy enlisted men who accompanied them.

The ship docked at Newport News, Virginia, in October 1945, and the horses were unloaded and shipped by rail to the Aleshire Quartermaster Depot (Remount), Front Royal, Virginia, where they went into strict quarantine. All during the winter and early spring they were conditioned, and were not shown to the public until April 7, 1946. At that time an exhibition of these horses was held before a crowd of several thousand visitors, including some of the best known and most distinguished horse-breeders of America.

Some of these horses are valued highly from a monetary standpoint. Their value to the Army Horse-breeding Program is so great that it cannot be measured in dollars and cents. Following is a short description of the various breeds and of a few of the better horses.

The main interest of civilian breeders, of course, lies in the Thoroughbreds, for they are the horses which are eligible for registration with the Jockey Club and for racing on the various tracks in the United States and all over the world. The top representative of this breed is Nordlicht, a five-year-old chestnut horse, for whom offers of up to $300,000 have been made. Nordlicht won the German Derby in 1944. His sire, Oleander, also won the German Derby and was an undefeated racer. These Thoroughbreds, as a whole, represent the finest bloodlines of all Europe. In their pedigrees the names of the famous stallions Oleander, Herold, Bubbles, Janitor, Alchemist, Teddy, Belfonds, Brantome, Blandford, Pharis, Pharos, Flamboyant, Tracery, Blenheim, Manna, Mannamead, Swynford, Phalaris, and Fairway appear again and again. In addition to Nordlicht, Athanasius, who also won the German Derby, Konig Laurin, an ex-steeplechaser, Tagfalter, and Taj Akbar, who formerly belonged to the Agha Khan and was second in the Epsom Derby, were brought to this country.

Also included in the shipment were twenty-three Arabian horses, bred in the Polish Stud in Janow and in the Hungarian State Stud in Babolna. The origin of

the Arabian breed has been the subject of much romantic invention. As a matter of fact, existence of the horse in Arabia proper is of comparatively recent date, the best horses of earlier times having been in middle Asia and Persia. One generally accepted version of the origin of the foundation stock of Arabians is the report that a tribe in flight from Mecca to Medina started out with ninety-five mares, only five of which reached Medina alive, and that these five were the foundation stock of the Arabian breed. The fact that one of the primary qualities of the Arabian horse is his endurance lends credence to this report. There are not a great many directly descended Arabian horses in the world —probably less than 30,000. The two best Arabians brought over in this shipment were Lotnik and Witez II. Lotnik is an eight-year-old grey horse, by Opal out of Mokka. He was bred in Poland and brought to Germany by the German Army as a yearling. The Germans felt, and horsemen of this country are inclined to agree, that he is one of the finest Arabian stallions in the world. He is both a nice horse and a good horse, having the quality, performance, style, and temperament that you hope to see in a nice horse, and the spirit and durability that characterize a good horse. Witez II, an eight-year-old brown horse, by Ofir out of Federacja, was bred in Poland and brought to Germany as a yearling by the German Army to be installed in their newly organized Arabian Stud. His sire, Ofir, represents one of the most popular Arabian lines. In the ten generations of his pedigree there appear eleven desert-bred horses, among them his grandsire, Kuhailan-Haifi.

Fifteen Arab Kinds were included in this shipment. This particular breed comes from Hungary, and through it the Hungarians have attempted to maintain the original Arabian characteristics and, at the same time, improve the size and substance. They originally imported to Hungary, in the middle of the 18th Century, Shagya, of the Koheilan breed, and many others, including Obajan, Hadbar, and Siglavy-Bagdady. The fifteen brought over are descendants of these foundation stallions. Pedigrees of these animals have been recorded since the early 1800's.

Also included in this shipment were nine Lippizzaners, bred by the Hungarian State Stud at Babolna. They originated in Lippizza on the border of Italy and Austria. They were first brought into Austria in the 16th Century and are said to have the oldest recorded stud book of any breed in the world. These horses were bred primarily for coach horses for the royal family, high school horses for the Spanish Riding School in Vienna, and stallions for the farms where more active draft horses were needed. They are all descendants of the original five stallions of the Lippizzaner breed—Favory, Conversano, Maestoso, Neapolitano, and Pluto.

The forty half-bred horses which were also included in the shipment are probably, from a strictly Remount viewpoint, the best things that we have. Because of the splendid foundation stock in Europe, the Europeans have bred very intelligently, adding a little hot blood and a little cold blood where needed until they have developed a half-bred which is just about right. Not only has their breeding been intelligent but their selection has been based entirely upon performance. They introduced half-bred racing, and all the stock passed some very strenuous racing, endurance, and performance tests before being put in the nursery. One mare named Adian won a couple of races against many Thoroughbreds. One of these races was 34 miles and 6 furlongs; she won it in 1 hour, 50 minutes, and 40 seconds, carrying almost 200 pounds. Two days later she won a four-mile race on the flat, also against Thoroughbred horses. It is horses of this type that will do much to improve the breed of riding horses in the United States when put to use through the Army Horse-breeding Program.

The U. S. Army Horse-breeding Program had its inception in 1920. During the First World War, when the Army was purchasing a large number of horses, it was discovered that there were not sufficient qualified riding horses available in the United States. In 1919 the Secretary of War appointed a Remount Board, consisting of prominent civilian horsemen and Army officers, for the purpose of making a study and recommendations concerning this lack of good riding horses. The Department of Agriculture was carrying on a small breeding program with about thirty stallions throughout the country. The Remount Board recommended that the Army take over these stallions and expand the program to supply sufficient riding horses for civilian horsemen and for the Army's use in case of need. In the twenty-five years since the Program's inception the Army increased the number of stallions to a peak of

Nordicht, superb five-year-old stallion. He is one of the many splendid animals at Front Royal.

over 700, and at the present time has 500 stallions scattered throughout the United States with civilian agents in small communities.

The stallions imported from Europe will be of inestimable value in furtherance of the Army Horse-breeding Program, and the mares will be placed in the brood mare bands in the various remount depots for the purpose of producing additional stallions to carry on the Program.

The Thoroughbreds remain at Aleshire QM Depot (Remount), Front Royal, Virginia, pending completion of their registration with the Jockey Club; the Arabs and Lippizzaners have been shipped to the Pomona QM Depot (Remount), Pomona, California; the half-breds have been shipped to the Reno QM Depot (Remount), Fort Reno, Oklahoma; and the Arab Kinds were split between Pomona QM Depot (Remount) and the Reno QM Depot (Remount). The majority of the stallions were used in the studs of these depots this year, and next spring will go out with agents to further the Army Horse-breeding Program to improve the breed of riding horses throughout the United States—a project which has met with the complete approval of the American ranchmen and breeders.

CAVALRY LEADERSHIP TESTS TO BE RENEWED IN 1947

Armored Cavalry units will renew competitive tests in 1947 to develop leadership in platoons, it has been announced by General Jacob L. Devers, Commanding General, Army Ground Forces. Competition in 1947 will be restricted to units stationed in the continental United States.

These tests were instituted in 1928 when an anonymous donor gave $35,000, the income from which was to be expended on prizes and awards to encourage and promote cavalry leadership. They had to be abandoned at the outbreak of war in 1941.

The test will be divided into four parts, each part weighted as follows:

(1) Army Ground Forces Physical Fitness test, one-sixth.
(2) Disciplinary record of platoon, one-sixth.
(3) Army Ground Forces Platoon Combat Firing test, one-third.
(4) A tactical motorized march of more than two hours, bivouac and night movement to an attack position, inspection of clothing, equipment and clothing, one-third.

Three prizes will be awarded in 1947. Two will go to the Second Armored Division and the third will go to the Third Cavalry Group (Mechanized).

The new Tables of Organization for the Armored Division call for an increase in the tank strength from 265 to 400 (increase to be in medium and heavy tanks), increased fire power, and an increase in personnel from 11,000 to nearly 15,000 officers and men. The new Armored Divisions will include addition of a battalion of heavy artillery, and there will be four infantry battalions instead of three as at present, with a company of infantry added to each battalion. Under the new organization, the Armored Division will have a strength of 16 rifle companies instead of nine, as at present.

The new organization will be equipped with approximately 50 light tanks for reconnaissance purposes and three battalions of medium tanks—improved General Sherman tanks (35 tons) to be armed with 76mm guns.

Added to the new Armored divisional organization will be another battalion of General Pershing tanks to be employed in assault operations. These heavy tanks, which weigh between 45 and 50 tons, will be armed with 99mm guns. The new organization will also provide for an increase in medium artillery.—*Army and Navy Register.*

The New National Guard

*by Major General Butler B. Miltonberger**

A NEW National Guard program is in the making in connection with the plans for the postwar military establishment. Our objective will be to keep secure the peace for which our armies fought. From the many lessons learned in this recent war the most outstanding is that preparedness is the keynote of military policy. The maintenance of a Regular Army alone will not provide this preparedness. The National Guard, organized and ready for immediate mobilization at the order of the Commander in Chief, will provide the first lines of defense if ever again we are threatened by another world conflict.

The National Defense needs of the United States require a broader dissemination of knowledge of military affairs, tactics, and technique through the rising generations of manpower than has ever been necessary before. I am strongly of the opinion that the best solution remains with some form of universal military training under Federal auspices with a close integration of that program with the civilian components of the Army and Navy.

The present authorization of troops by the War Department for the National Guard totals 682,000 including 620,000 Ground Force troops, 58,000 Air troops, and 4,000 for the Headquarters and Headquarters Detachments, which provide the administrative personnel in the offices of the Adjutants General of the States.

The Ground Force troops include 25 Infantry Divisions, two Armored Divisions, and considerable numbers of Antiaircraft Artillery, Armored Cavalry, Engineers, Field Artillery, Medical, Ordnance, Quartermaster, Tank, and Signal troops. Of the total authorized Ground Force troops all except 57,102 have been officially accepted by the Governors of the States.

It has been decided that, by and large, the new National Guard will initially be a veteran force. The officers holding posts in this force will be required to have performed efficiently in wartime federal service in the same positions or in positions of "corresponding and equal responsibility" to those to which they are appointed in the new National Guard.

But what of the enlisted men? Particularly, what of the noncommissioned officers?

A year ago this summer it began to be certain that the war was nearly over. We would want to use our war veterans to form the new National Guard. As the officers would come home, they would, under standing provisions of law, still retain their old "recognitions" in their old units. All enlistments would, however, have expired. The enlistment in the National Guard of a State is for three years. The induction was in 1940 and 1941. Those enlistments expired while the guardsmen were in federal service. A year ago we had no enlisted men in the National Guard at all, not even the returned soldiers to use as a nucleus.

So in August, 1945, we attacked the problem. The result was a circular issued in September, 1945, to permit the resumption of enlistments in the National Guard. Only men who had completed their federal service could be enrolled.

Then the Japanese surrendered. The War Department determined in October new over-all policies for the new National Guard. A plan for organization was prepared. Money was provided in appropriation acts of Congress. Equipment and supplies were provided. Training provisions were sketched. But still we had no soldiers.

This summer we were ready to go ahead, but it was a difficult problem. The war is even yet not over and Selective Service is still taking men for the army, although now between the ages of 19 and 29 only. The Recruiting Service is still enrolling people. We would be in competition with them for personnel. But finally the matter was settled.

The National Guard would start recruiting. It would have no prior claim on men eligible for induction through Selective Service. Those who had not helped in the war effort and who were eligible for the draft owe their first duty to the occupation forces. We would take veterans and would fill the first few low percentages of our strength from those who were experienced soldiers. We could take in some 18-year-olds not yet eligible for induction and season them but would release them to the draft when they would be called for Selective Service. The veterans would break these men in right, and would give them their first introductions to military affairs in the familiar surroundings of a home-town unit, with home-town support.

This procedure will give us two things: First, it will give us a seasoned backbone for the postwar National Guard and second, it will introduce the National Guard as a home-town force to the younger generation growing up.

Next to the Regular Army there will be no larger organized military force than the National Guard. We are aiming at a target strength of 514,000 to be reached within the next two years. This organized force is going to be ready to fight any place in the world under any combat condition.

We have enlarged the over-all troop basis two and a half times compared to what it was in 1940. We are going to train our National Guard the same as the Regular Army and we are going to employ the latest

*Chief, National Guard Bureau.

developments in warfare to their best advantage. Radar, the target-seeking missile, the jet-propelled plane, and the proximity fuse will add to our National Defense and will be used by the National Guard in providing that defense.

We are going to train harder than ever before. That two-week field period must be two weeks of hard work and intensive training. But to make this training pay off we need leadership. We prefer for a time war veterans. We need them for our noncoms and for our officers. All of our plans revolve around the experienced leadership that can be trained into the National Guard by men who have that experienced leadership to start.

Upon receipt of the original National Guard troop basis of 572,000 the National Guard Bureau prepared a study allotting to each State, Hawaii, Puerto Rico, and the District of Columbia, the equitable share of troops based upon the military manpower of the State and also based upon a desire to provide a balanced force in each of the various parts of the country. We looked carefully into the facts as to what units, especially what types of units, had been furnished by the States for the induction of 1940 and 1941. We did this partly on account of the question of armory facilities because, as you well know, an artillery unit with specially heavy arms and equipment needs stronger floors and structure for its armories than a lightly equipped Infantry unit. We also were thinking that the localities from which the former units were drawn would very likely have a reservoir of war trained personnel for units of those types. But we were principally thinking of preserving, in so far as possible, the historical continuity of the units of your States.

The particular problem before us at this minute is to conform to the over-all needs for the National Defense as now presented and still not break the historical continuity of the units which the States furnished the National Government in 1940 and 1941. We have been in consultation with the Historical Section of the Army War College upon this subject and we have been assured that a little care in the administrative handling of the reorganization will definitely preserve unit histories. It may be understood that the units which the States furnished to the Federal Government upon induction have been returned to those States in accordance with the provisions of Section III of the National Defense Act, and that when the Governors agree to a change in allotment they have had those units in their hands and are agreeing not so much to surrendering them as to changing their character. Consequently, when they issue orders for the reactivation and reorganization of the National Guard of the States, they can preserve unit histories by having the orders read that the old unit is redesignated as the new unit.

Cavalry and armored units in the new schedule of National Guard troops will be quite different from those of the past. Prior to the war we had two cavalry divisions (in addition to several other cavalry units) and we had a tank company in each of the old square type infantry divisions. These were all reorganized between 1939 and 1942.

Now there will be no horse cavalry units at all. There will be a mechanized cavalry reconnaissance troop in each of the 25 infantry divisions. There will be other mechanized cavalry as follows:

California: 39th Cavalry Group with the 109th and 118th Reconnaissance Squadrons.
Illinois: 106th Cavalry Reconnaissance Squadron.
Idaho: 114th Cavalry Reconnaissance Squadron.
Iowa: 113th Cavalry Reconnaissance Squadron.
Massachusetts: 211th Cavalry Reconnaissance Squadron.
Missouri: 108th Cavalry Reconnaissance Squadron.
New Jersey: 102d Cavalry Group with the 102d and 117th Reconnaissance Squadrons.
New York: 101st Cavalry Reconnaissance Squadron.
Ohio: 107th Cavalry Reconnaissance Squadron.
Pennsylvania: 104th Cavalry Reconnaissance Squadron.
Texas: 56th Cavalry Group with 112th and 124th Reconnaissance Squadron.
Wyoming: 115th Cavalry Reconnaissance Squadron.

The total nondivisional cavalry strength in the new National Guard will total 609 officers, 45 warrant officers, and 9,402 enlisted, or an aggregate of 10,143.

There will be two complete armored divisions, the 49th in Texas and the 50th in New Jersey. Including these divisions there will be armored units which will total 1,356 officers, 98 warrant officers, and 17,803 enlisted, or an aggregate of 19,257. The nondivisional armored troops now allotted include:

Arkansas: 206th Tank Battalion.
California: 199th Tank Battalion.
Colorado: 193d Tank Battalion.
Georgia: 190th Tank Battalion.
Idaho: 200th Tank Battalion.
Indiana: 134th Tank Battalion, 299th Armored FA Battalion.
Iowa: 634th Tank Battalion.
Kansas: 635th Tank Battalion, 161st and 154th Armored FA Battalion.
Kentucky: 192d Tank Battalion.
Louisiana: 773d Tank Battalion.
Massachusetts: 177th Tank Battalion.
Michigan: 188th Tank Battalion.
Minnesota: 194th Tank Battalion.
Mississippi: 198th Tank Battalion.
Missouri: 196th Tank Battalion.
Nebraska: 195th Tank Battalion.
New Jersey: 695th and 696th Armored FA Battalions.
New York: 24th and 171st Armored Group with 116th, 180th, 801st, 802d, and 827th Tank Battalions.

Ohio: 107th Armored Group with 185th and 637th Tank Battalions, 987th Armored FA Battalion.
Pennsylvania: 172d Armored Group with 181st, 628th, and 629th Tank Battalions, 176th and 967th Armored FA Battalions.
Tennessee: 173d Armored Group with 183d, 775th, and 765th Tank Battalions.
Utah: 145th Armored FA Battalion.
Virginia: 182d Tank Battalion.
Washington: 652d Armored FA Battalion.
West Virginia: 197th Tank Battalion.
Wyoming: 300th Armored FA Battalion.

Other continuing studies that must be resolved in the immediate future deal with personnel, supply, and fiscal requirements.

In considering officer personnel policies, I will limit my discussion primarily to an interpretation of the requirements which have been established for initial procurement. Our War Department Policies establish a basic requirement for procurement of officers in the initial reorganization which limits initial procurement above the grade of second lieutenant to those officers who have served honorably in active Federal service in the Armed Forces for at least six month since 7 December 1941 and who, during that period, demonstrated their qualifications by actual service in the grade and position contemplated, or by satisfactory discharge of duties of corresponding and equal responsibility. The restriction limits selection of officers to certain groups. First, there is the group consisting of our National Guard officers who retain Federal recognition, some of whom are now under State control and some still in active Federal service. These officers constitute an immediate problem for the State, since they must either be absorbed in the reorganized National Guard or transferred to the Officers' Reserve Corps. These National Guard officers should be utilized to the fullest possible extent provided that they meet age-in-grade and physical requirements for continued recognition. Since reassignment will in many cases involve a change in grade, or arm or service, many of them will be required to appear before a board for examination as to their qualifications for the new assignment. This is sound procedure and I might suggest that it be followed in the case of all of these officers. Vacancies may be retained for those officers who are still in Federal service. Our phasing plan provides for this contingency since only 25 per cent officer personnel is necessary for recognition of a unit.

The War Department has recently lowered the age for enlistment in the Regular Army to 17 years by virtue of a special statute. War Department Policies state that National Guard enlistment standards will be the same as those provided for the Regular Army including the age qualifications. But we cannot make this change yet. We are still bound by the old law, that is by Section 58 of the National Defense Act, which still says, "not less than 18 years." The National Guard Association has made a definite suggestion for such an amendment.

The law permits the enlistment of men up to the age of 45. The Approved Policies restrict the age for original enlistment to 35, because that is now the War Department's upper limit for the Regular Army. Indeed, the age limits of 18 to 35 were those specifically mentioned elsewhere in the Approved Policies in blueprinting the new National Guard. I think we will get the young and vigorous men we want for an M-Day force if we hold to the lower limit of 35, men for our senior noncoms.

As for the supply plan of the National Guard it is the responsibility of the War Department to procure by purchase within the limits of appropriations made by Congress and to issue from time to time, upon requisition of the Governors, such material, clothing, and equipage as may be necessary to arm, uniform, and equip the National Guard for field service. Federal property will be issued within the limits of available appropriations on the basis of Tables of Organization and Equipment prepared by the War Department.

Before equipment is issued, the National Guard units to which equipment is to be issued must be Federally recognized or the State must accept for immediate activation a portion of the National Guard Troop Basis allocated to the State. No unit will be Federally recognized until the State has provided adequate and suitable facilities for the unit to store and care for Federal property. Determination as to the adequacy of such facilities is made by the Secretary of War. A State cannot be relieved from responsibility of Federal property issued to it which becomes lost, stolen, destroyed, damaged, or unserviceable unless it is clearly shown that reasonable precautions to care for and safeguard the property were carried out; that loss, damage, or destruction came about unavoidably through the fault or neglect of no one; and that the unserviceability resulted from fair wear and tear in the service.

In so far as supply is concerned, the State Headquarters is comparable to an Army Headquarters. The U. S. Property and Disbursing Officer, who is a member of the State Headquarters, is comparable to the station supply officer. The National Guard will be supplied from the same sources and use the same procedures that apply to the Regular Army in the Zone of Interior. The initial shipment of equipment and supply will be a fraction of the total authorized for the full strength organization and will be based upon actual requirements for meeting the training program.

When looking into the maintenance requirements for the National Guard, we find the same factors that apply to any military maintenance problem. The various Tables of Organization will give us the details of organizational equipment; the training program will give us information on which to estimate the usage of this equipment; the mission of the National Guard

demands that the equipment be in constant readiness for combat use.

We have three classes of maintenance—organizational, field, and base. The organizational and field maintenance will be the responsibility of the Guard itself within various States. Base maintenance will be a responsibility of the Technical Services. In comparison with the prewar situation, the Guard will have a greater quantity of increasingly complex equipment. Responsibility for organizational maintenance is within command channels and each organization and unit commander has his definitely fixed responsibilities.

In recognizing the limitations put on unit maintenance provision is made for unit caretakers. This unit caretaker will be classified as a matériel and maintenance mechanic and will be a full-time employee. He will be required to be a member of the Guard and of the unit concerned. In addition to having custody of the equipment and property of the Unit, he will perform unit organizational maintenance, within his capacity, under direction of the unit commander. In units, such as tank companies and artillery batteries, when the amount of equipment in the hands of the unit is such that the maintenance load is beyond the capacity of one caretaker, we expect to authorize additional caretakers.

We have in the troop basis a certain number of service troops. There are, of course, the divisional service troops in each of the divisions. In addition to these units, we have 11,000 ordnance troops, nearly 8,000 signal troops. In addition to the necessity for having all equipment for the Guard continuously in combat serviceable condition, we must also have these service troops at a high degree of readiness if our Guard units are to be effective in sustained combat. It is obviously impossible for these service units to perform any appreciable part of the required field maintenance during their authorized weekly drill period.

We have a provision in the law for the establishment of caretaker pools. We intend to use this authorization to establish in our service units the necessary number of maintenance pools to meet our responsibility for field maintenance. In general, these maintenance pools will be composed of members of the Guard service units employed on a full-time basis at mechanics' wages. We will utilize the Army technical schools for training these individuals to the extent required. Our current budget estimate provides for an adequate number for the fiscal year, 1947. The exact number to be required in the future will depend upon experience. In ordnance maintenance units, we may have up to 20 per cent of certain organizations on this full-time duty. In carrying out maintenance operations, they will utilize organizational equipment furnished to units and will replenish basic loads of supplies and spare parts by requisition. It is obvious that fully qualified service units will be the result of this system.

Funds appropriated for the support of the National Guard will provide the salaries for all caretakers and reimbursement for supplies.

In addition to supply and maintenance responsibilities, it has been necessary for the National Guard Bureau to take the lead in establishing a firm installations and facilities program. In the National Guard policies, we have already stated that "The States will furnish the personnel, adequate armories, and storage facilities." The United States will supervise instruction and will furnish outdoor training facilities, pay, and all uniforms, equipment, and ammunition.

The interpretation was made that armories and related facilities for local use of the troops would be a State responsibility, and that the summer training camp would definitely be a Federal responsibility. There is an in-between matter of rifle ranges, week-end training sites, and other similar facilities, but this will have to be worked out as we go along. It was necessary to present specific cases to G-4 for definite reaffirmation of our concept of this approved policy. The following policy announcement resulted: "The facilities selected for summer training of the National Guard will be retained under Federal control in accordance with approved War Department policy. Necessary instructions have been issued to the Commanding General, Army Service Forces, to hold the post, camp, and station property necessary for the summer training of the National Guard and to provide necessary fire protection."

Based upon the proposed allocation of troops, which was submitted to the States, a total of 31 stations and 18 harbor defense installations have been approved by the War Department for the summer training of the entire Ground Forces of the National Guard. It is anticipated, at this time, that the Air units will do their summer training, in general, at their home Air Bases. The approved camps, except harbor defense installations, in some cases, cannot accommodate the entire Guard allotted at one time. It is obvious that for these stations the training periods must be phased. It is, however, intended that complete divisions, wherever they are organized, will train at summer encampments as a unit.

The unprecedented size and scope of the postwar National Guard under the approved troop basis has presented a major budgeting problem to the National Guard Bureau. The 1947 Budget is the largest budget estimate ever submitted for Federal appropriation to support the National Guard. Definite assumptions had to be made to form a basis from which to build the estimate. These assumptions included that activation of the National Guard would be early this year, that the attained strength as of June 1947 would be 240.000 officers and enlisted men, and that 72,000 of these would engage in field training at the end of the fiscal year 1947.

Book Reviews

THE ADMIRALTIES. Historical Division, War Department. Printed by Government Printing Office. 40¢.

The first Cavalry Division and its conquest of the strategically important Admiralty Islands is the subject of this 150-page book published in October by the Historical Division of the War Department.

This is the eighth in a series of historical reports published by the Historical Division to be followed by others on all phases of World War II.

Every phase of the Admiralties campaign is covered in this interesting little book, from the assault on Los Negros and the battle to hold that beachhead, the control of Seeadler Harbor, the attack on Manus Island, the landing at Lugos Mission, the capture of Lorengau airdrome, to the capture of the outlying islands—Pityl u, Koruniat, Ndrilo and Rambutyo.

With an initial force of 1,000 men to the enemy's 4,300, the landing force not only overwhelmed the enemy but exacted a vastly disproportionate number of casualties from the defenders. Against American losses of 326 killed, 1,189 wounded and four missing, Jap casualties were estimated at 3,280 killed and 75 missing, an approximately 10-to-1 ratio.

The actions of men and individual units are described in detail in this book. Names of outstanding First Cavalry Division soldiers are on practically every page.

This is a book that every present and former member of the First Cavalry Division will want to own. It is also a book for everyone as it tells the story of one of the hardest fought campaigns in World War II.

It is highly recommended reading.

* * *

INCENDIARY WARFARE. By Colonel George J. B. Fisher. The McGraw-Hill Book Co. $3.00.

Here is a book that tells in as simple a way as possible the sequence of events leading up to an explosion, the phenomena produced, and the effects of these phenomena on the surroundings. It describes the destructiveness of the bombs and shells in warfare, and the effects of the accidental explosions in munition plants and elsewhere. Clear, concise, up to date, the book gives data on 125 notable explosions and charts, practical graphs of the damage from these actual charges.

Introduction to this book of 125 pages is written by Major General Alden H. Waitt, Chief of the War Department Chemical Warfare Service. In his three-page introduction General Waitt states "The contribution to victory by incendiaries was a tremendous one."

This book is recommended reading for all those interested in bombs and their effect.

THE MONASTERY. By F. Majdalany. Houghton Mifflin Co. $2.00.

World War II was remarkable for the severity, the impact, often the brevity, of its isolated engagements and campaigns. Of these none was more violently concentrated than the classic attack on Monte Cassino which resulted in the capture from the Germans of the symbolic Monastery founded by St. Benedict in the Sixth century.

This book, written by a British officer who took part in the fight to capture Monte Cassino, is a personal narrative of war well worth reading. It is the story of fighting men written by one.

* * *

ALL BUT ME AND THEE. By Brigadier General Elliot D. Cooke. Infantry Journal Press. $2.75.

General Cooke has written a powerful and important book. It is certainly must reading for every military reader.

It is the first book written for laymen by a layman that gives a clear and understandable picture of psychiatric cases in the army. Psychiatric cases cost us hundreds of thousands of fighting men at times when fighting men were at a premium, millions of dollars while school children were being urged to buy defense stamps instead of candy, and tens of thousands of hospital beds when other patients were being turned away.

Why are there so many of them? What will the United States do about it? What is wrong with these men? Are they salvable? Total losses? Can they get along in civilian life? Are we handling them right? General Cooke does a creditable job of answering these questions and hundreds more.

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MOUNTAIN PONY. By Henry V. Larom. Illustrated by Ross Santee. Whittlesey House. $2.00.

This is a rousing present-day adventure story for all boys and girls who like horses and outdoors.

Andy Marvin, soon after his arrival in Wyoming, buys a sorrel pony from a man who is abusing it. Although Andy is bucked off, run away with and subjected to all the mischievous tricks a Western pony can think of, he gradually tames tough little Sunny. Eventually they become inseparable companions.

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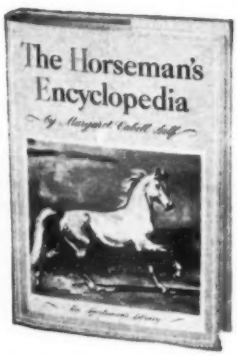

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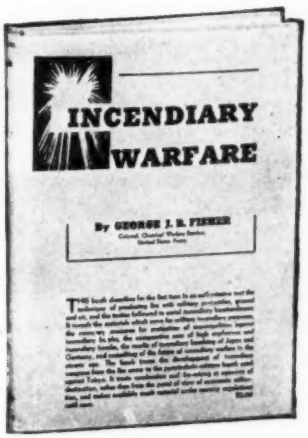

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THE ROOSEVELT I KNEW. By Frances Perkins. The Viking Press. $3.75.

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THE NAVY'S AIR WAR: A MISSION COMPLETED. By the Aviation History Unit OP-519B, DCNO (Air). Edited by A. R. Buchanan, Lieutenant, USNR, with a Foreword by Admiral Marc A. Mitscher. Harper & Brothers. $3.50.

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He closes his booklet by writing, "Yes, we were a hot 60 per cent in 1945, but we were a chilly 10 per cent in 1939, when the shooting began, and I am afraid we had better not be caught cold like that the next time. Any questions?"

* * *

THE FUTURE OF AMERICAN SECRET INTELLIGENCE. By George S. Pettee. Infantry Journal Press. $2.00.

Mr. Pettee, a member of the Department of Political Science at Amherst College and former Chief of the European Enemy Division, FEA, contends that a proper intelligence organization can help to prevent wars, help us greatly in a war that cannot be prevented, improve our position among the countries of the world, and prevent waste motion in political, economic, and foreign affairs.

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FRONT-LINE INTELLIGENCE. By Lieutenant Colonel Stedman Chandler and Colonel Robert W. Robb. Infantry Journal Press. $2.50.

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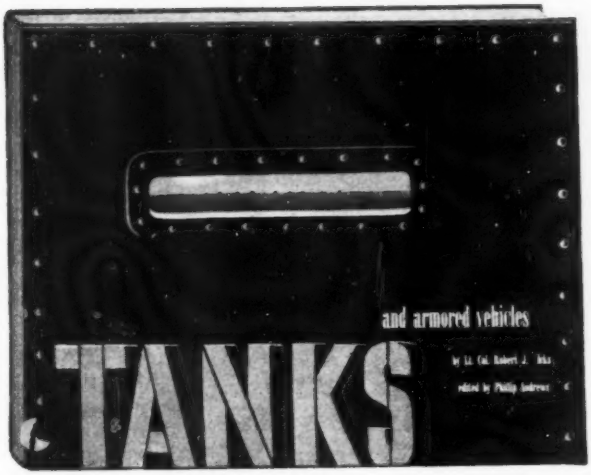

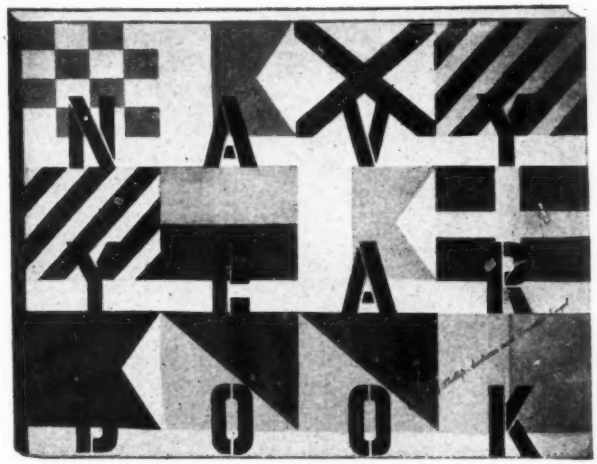

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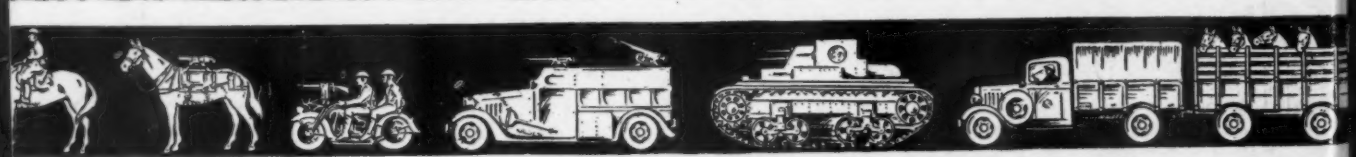
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